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THE AUTOMOBILE

After Leaving Amagansett on the Road Across the Meadow to Montauk Point.

MANHATTAN'S "Automobile Row" had an enjoyable two days' outing on Long Island on Wednesday and Thursday, September 16 and 17, in which a considerable contingent of pleasure seekers, regularly entered as tourists, or volunteering for official duty, participated. The excuse for the happily conceived and well received junket for the tradesmen and their friends and all comers was by name a "two-day mechanical efficiency motor car test and run around Long Island." It was the conception of W. J. Morgan, who, in the interim of newspaper work, finds time to discover Ormond, to get cars to climb to the clouds, to persuade motor boats to cross the Gulf Stream to the Bahamas, and to suggest unending stunts to automobilists seeking for novelty and excitement.

The New York Automobile Trade Association saw a holiday ahead and readily consented to the event being run under its auspices. It duly appointed Morgan its manager and the "Senator" set Alex Schwalbach to work at the details and framing up a set of rules that would afford an acceptable and not too strenuous schedule and regulations that would not interfere too much with the holiday spirit of the affair. Schwalbach took an experienced tour manager and follower, R. H. Johnston, into consultation, and between the two they evolved an adequate set of rules. In brief, tardiness at controls lost a point per minute, and work on repairs, replacements, or adjustments a point per minute per man engaged, with no penalization for tire repairs.

Everything went off as merrily as a marriage bell. Every one was so "delighted" and had such a "bully good time" that Morgan's latest stunt was unanimously voted well worthy of annual repetition as a scheduled autumn trade outing. While the selling fortune of no make could be said to have been made, it is equally true that no serious damage was done any particular brand of automobile by the outcome of the run.

What more inviting two days' jaunt could be offered a New Yorker at his very doorstep than a two days' jaunt around Long Island? There was enough of cool autumn twang to the air to make the ride exhilerating. The first day's run was along the south shore, after a pretty ride through Bay Ridge, Bensonhurst, Bath Beach, over the boulevard along New York Bay. Then came the Merrick road, which further on becomes the South Pike, running through fashionable Babylon, Bay Shore and Islip, to the Hamptons and the picturesque Shinnecock Hills, with their quaint windmills and unique villas nestling on the sand dunes, and winds up at Amagansett. Break the run with a beefsteak dinner taken *al fresco* at Ye Anchorage Inn at Blue Point and one can ask for no prettier day's jaunt from the environs of the metropolis.

It would not have been Morganesque, however, to have furnished no spicier touring menu than such a peaches and cream jaunt over level macadams and smooth gravel highways as the run from Brooklyn Bridge to Amagansett. From this point as a *pièce de resistance* he had prepared a road tussle over a practically untraveled stretch of wild country to the eastern end of Long Island, where the Montauk Point light casts its ray over the conflux of sound and ocean. It was an almost pathless run for thirteen miles, at times through deep sand, at all times through some sand, and at some times with pretty stiff grades up the dunes and larger hills added. Troubles soon began and before the night was over in some cases they had developed into a series of real adventures.

It was well on toward sunset when the caravan entered the desert, with schedules varying from 50 minutes for the large to 59 minutes for the small cars in the run. The Amagansett turnpike had not been left many miles behind before cars began to be stalled and in turn to stall others following imprudently close behind them. It was a case of keep one another, for it was no easy task to pull out of the rut and around. It was soon realized that time was short and then hurry was the order of the day. Fair passengers got a merciless jolting and masculine live freight got a pretty bad shaking up. To add to the schedule making difficulty in such a waste there were few landmarks and cars went astray following the wrong trails. So it was that only about half of the cars got through on schedule and a majority of them made it with the narrowest of margins.

Two cars met with casualties in the battle through the sand that put them out of the run. H. M. Casbrunt's Lozier broke its differential in a rut and incidentally stripped its gears in endea-

Gathered in the Shadow of Montauk Light.

Pacemaker at Vanderbilt Crossing, Near Oakdale.

Signs Which Marked the Route of the Run.

A Good Samaritan Whose Help Was Appreciated.

voring to extricate itself. A farmer was fortunately found to tow the car to Amagansett. A Stoddard-Dayton, piloted by R. L. Newton, was less fortunate. It broke a wheel and had to be abandoned until the arrival of a new wheel the next day. It had two ladies aboard. R. M. Owen insisted on starting back at 10 o'clock in the Reo to rescue the stranded party, but missed them in the dark. In the meantime they had started to walk to Montauk Inn. They followed the railroad tracks some of the way and reached the inn at midnight. Belated and lost cars straggled in all during the evening and night.

At a meeting of the committee to consider the cause of the delayed cars, it was leniently and diplomatically decided by Morgan and his advisers to call off the sand battle altogether and make Amagansett the end of the first day's control. There was no little kicking, as might be expected, from those cars that had survived the run through the sand, the only real test of the day.

The early arrivals preempted all the rooms at the inn not set apart for the ladies. The others to the number of close to 150 were forced to find their way as best they could to the steamer *Shinnecock*, which was moored at the dock, having been chartered to accommodate the overflow. The wind came up and became almost a gale. The boat rocked and banged against the dock, so that little rest was had in the four-dollar berths. Many were too sick to enjoy very much either their "dollar and a half" dinner or their "dollar breakfast." The favored inmates of the Inn, at $3 for a comfortable bed, a good dinner and a refreshing breakfast, were much envied.

The caravan got away from Columbus Circle at 7:20 A. M. on Wednesday, proceeded down Broadway, across Brooklyn Bridge, and along the Bay boulevard to the Crescent Athletic Club at Bay Ridge, where they checked out and were sent on their journey by Fred J. Wagner.

The cars were classified as follows: Class A, cars selling for $850 or less; class B, cars selling for $851 to $1,250; class C, cars selling for $1,251 to $2,000; class D, cars selling for $2,001 to $3,000; class E, cars selling for $3,001 to $4,000; class F, cars selling for $4,001 and over; class G, taxicabs carrying two passengers and driver.

The participants in the run were 28 contestants and 8 tourists, besides a half dozen official cars, making some 42 cars in all.

Contestants.

Class.	Make.	Driver.	Entered by
A	Cadillac	E. H. Brandt	Detroit-Cadillac Motor Car Co.
A	Maxwell	F. O. Hinhauser	Maxwell-Briscoe Motor Co.
A	Reo	J. W. Gogarn	R. M. Owen & Co.
A	Ford	Frank Dunnell	Ford Motor Company.
A	Brush	W. W. Price	Brush-McLaren Motor Co.
B	Reo	R. M. Owen	R. M. Owen & Co.
C	Maxwell	C. D. Kelsey	Maxwell-Briscoe Motor Co
C	Mitchell	O. R. De Lamater	Mitchell Motor Co.
C	Mitchell	W. D. Brown	Mitchell Motor Co.
C	Chalmers-Detroit	William Knipper	Carl H. Page & Co.
D	Mitchell	C. A. Kirchhof	C. A. Kirchhof.
D	Apperson	Sidney B. Bowman	Sidney B. Bowman Co.
D	Oldsmobile	F. G. Falberth	Oldsmobile Company of New York.
D	Stoddard-Dayton	A. H. Whiting	Atlantic Motor Car Co.
D	Pullman	Paul Cimiotti	Cimiotti Bros.
E	Mora	W. W. Burke	W. W. Burke.
E	White	Charles Lowd	The White Company.
E	Stevens-Duryea	Carl Reichenbach	International Generator Company.
E	Stevens-Duryea	Frank Eveland	A. G. Spalding & Bros.
E	Stevens-Duryea	L. Young	Stevens-Duryea Co.
E	Lancia	C. H. Tangemann	The Hol-Tan Co.
E	Locomotive	P. J. Johnson	American Locomotive Company.
F	Rainier	Mrs. Joan N. Cuneo	Mrs. Joan N. Cuneo.
F	Rainier	L. A. Disbrow	Mrs. Joan N. Cuneo.
F	Zust	V. P. Pisani	American Zust Motor Company.
F	Acme	J. W. Mears	J. W. Mears.
F	Lozier	C. A. Emise	Lozier Motor Co.
F	Locomotive	H. C. Townsend	American Locomotive Company.

Touring Division

C	Maxwell	Mrs. J. R. Ramsey	Mrs. J. R. Ramsey.
C	Autocar	Frank A. Burrelle	Frank A. Burrelle.

Gathered at Columbus Circle, New York City, in the Heart of the Automobile District, for the Early Morning Start.

D	**Haynes**	W. E. Shuttleworth	W. E. Shuttleworth.
D	**Oldsmobile**	W. J. Wyatt	Oldsmobile Company.
D	**Stoddard-Dayton**	R. Newton	Atlantic Motor Car Co.
F	**Stevens-Duryea**	C. M. Louther	C. M. Louther.
F	**Lozier**	H. M. Casbrunt	Lozier Motor Co.
	Sp'l Lancia	Harry Fosdick	The Hol-Tan Co.

The first day's run was 144.4 miles from Brooklyn Bridge to Montauk. The checking stations were at Lynbrook, 34.5 miles; Blue Point, 73 miles; Southampton, 115.2 miles; Amagansett, 131.6 miles, and Montauk Inn, 144.4 miles. The schedule called for 19 miles an hour for cars over $2,000 and 17 miles for cars under that price all the way to Amagansett, and for 15 and 13 miles respectively for the 13-mile sand battle.

The start on the second day was made sharp at 7:30 A. M. It began with a run of 6.5 miles to Montauk lighthouse, which raised the distance of the run back to Amagansett to 25.8 miles. The Stevens-Duryea "Big Six" burned out its clutch in the run to the lighthouse and was delayed at the Inn until the next day.

Wednesday's route was retraced as far as Good Ground, 49.8 miles. It here turned north to Riverhead. There the Suffolk County Fair was visited and the track was circled three times. The next checking point was Stony Brook. The run then followed the north shore, whose hills gave the cars a bit of a hill-climbing tryout, with a checking station at Oyster Bay. The last checking station was at Flushing, 154.5 miles. From this point the cars ran as they pleased, via Astoria ferry, to the Automobile Club of America clubhouse, a distance of 9.4 miles, having run 315 miles in the two days.

The Official Results from the Committee.

At a meeting of the contest committee on Tuesday, the following cars were announced as having clean scores, both mechanically and on the time schedules, for the two days' run:

CONTESTING DIVISION.

Class.	No.	Make.
A	1	Cadillac.
A	3	Maxwell.
A	11	Reo.
A	22	Ford.
B	6	Reo.
C	14	Chalmers-Detroit.
C	35	Mitchell.
D	9	Mitchell.
D	10	Apperson.
D	15	Oldsmobile.
D	34	Stoddard-Dayton.
D	40	Pullman.
E	5	Mora.
E	12	White.
E	25	Stevens-Duryea.
E	29	Stevens-Duryea.
E	31	Locomotive Taxicab.
F	7	Rainier.
F	8	Rainier.
F	20	Zust.
F	21	Acme.
F	30	American Locomotive.

TOURING DIVISION.

Class.	No.	Make.
C	38	Maxwell.
D	2	Haynes.
D	16	Oldsmobile.
Spl.	13	Lancia.
Spl.	4	F-H Motorcycle.

In the contesting division, No. 4 Maxwell was disqualified for taking the wrong road from Montauk lighthouse back to Montauk on the second day. No. 18 Stevens-Duryea, entered by a private owner, was penalized 105 points for ignition troubles. Mitchell No. 26 was penalized 125 points, an oil feed pipe becoming clogged on the second day. No. 39 Lozier was disqualified and the driver disbarred from competing in future events under the auspices of the association for leaving the noon control at Blue Point without checking out.

The following cars dropped out at various times, but finally reported at the clubhouse after the time limit had expired:

No. 28 Lancia, No. 32 Brush, No. 24 Stevens-Duryea, No. 33 Stoddard-Dayton, No. 37 Autocar.

At an early date the certificates and medals will be presented at the clubhouse of the Automobile Club of America, to which function the automobile trade of New York will be invited. A musical program will be arranged, besides the luncheon for all.

One of the Most Enjoyable Features of the Run Was the Stop at the Typical Country Fair at Riverhead, L. I.

PREPARATIONS FOR A. M. C. M. A. SHOW PROGRESSING

IN order to complete final preparations for the first big show of the year, that of the American Motor Car Manufacturers' Association to be held at the Grand Central Palace in New York, December 31-January 7, 1909, there will be a meeting of the Committee of Management of the A. M. C. M. A., Tuesday,

Design for Main Entrance Grand Central Palace Show.

October 6, at 10 A. M., while the Show Committee will meet Tuesday and Thursday, October 6 and 8, at the same hour. All applications for space must be received at the New York headquarters, 29 West Forty-second street, by October 1, and those in hand by that date will be treated alike, while subsequent applications will be given consideration by the Show Committee, following the drawing and allotment of prior applications. To pass upon the latter, Chairman H. O. Smith, of the Show Committee, has set the following dates: Members of the A. M. C. M. A. will draw Thursday, October 8 at 10 A. M., while the allotment of space to automobile manufacturers who are not members of the association will be made the same day at 2:30 P. M., and that to makers of accessories who are not members of the Motor and Accessory Manufacturers' Association, will be made at 5 P. M.

The event will be known as the Ninth International Automobile Show, and it is quite probable that the S. R. Ball Company, long identified with the decoration of the Garden shows, will be awarded the contract for beautifying the Grand Central Palace. The latter is a very much more difficult structure to handle in this way, but it is said that the plans contemplate so complete a transformation of the interior, as well as part of the exterior, that those familiar with the Palace will hardly recognize it. Four designs have been submitted by leading decorators, but after several weeks' deliberation, the Show Committee has about settled upon the Ball plan, although it is the costliest. While full details are not available at the moment, it is said that the decorative scheme is borowed from an early English period. Pillars and balconies will be a feature, open beam construction being employed in connection with ornamental stucco. The main galleries will be white and sap green, relieved by gilt signs, while the ceiling of the main auditorium will be covered with an Italian sky-blue fabric, a garden with statuary, mirrors and a profusion of plants, occupying what is ordinarily the stage. A series of paintings will be run round the entire balconies, the subjects being taken from recent automobile contests.

Doubtless the greatest change in the building will be found in the outside, the porte cochére being decorated with ornamental cast figures, balustrades, electric signs and a large painting, the whole being brilliantly illuminated with search lights, in order to advertise the presence of the show. In place of the customary floor covering, a heavy fabric with liberal under padding will be employed, and there will also be a departure noticeable in the draperies of the accessory division, an entirely new arrangement of silkoline back draperies being outlined with a unique electrically illuminated sign, supplemented by satin banners.

Both the automobile and accessory exhibitors will be supplied with glass signs and pennants holding electric lights, the whole being mounted upon ornamental pillars. The specifications call for ten six by eight-foot statues throughout the building, and something like 10,000 electric lights for the decorative lighting.

PERFECTING PLANS FOR THE NINTH LICENSED SHOW

THE Show Committee of the A. L. A. M. met last Monday to consider plans for the Ninth National Show of the licensed manufacturers, which will open January 16 in Madison Square Garden. There were present Chairman George Pope, Marcus I. Brock, M. L. Downs and E. P. Chalfant.

Arthur N. Jervis was again appointed press agent of the show, and the contract for advertising was awarded to Lord & Thomas. The committee then took up the matter of decorative lighting, with the idea of introducing some novel effects.

Spaces were allotted to exhibitors in the commercial vehicle department, but it was necessary to postpone allotments in the electric division in order to arrange if possible for the room to accommodate the extraordinary demand. The headquarters of the committee during the show will be at the Hotel Breslin.

CONCERNING STIFF AND WEAK VALVE SPRINGS.

Stiff valve springs may close the valves with so much force as to break the heads from the stems, or they may break the stems at the key slots. Springs too weak to hold the valves or the cams will make the engine weak at high speeds, and will produce clattering owing to belated seating of the valves. If the springs are too stiff, and are shortened, the cut ends must be turned flat, which necessitates heating them in a fire and afterwards retempering.

PHILOSOPHY OF DRIVING A BOLT HOME.

When a bolt on which a nut is to be screwed sticks before it is fully introduced in its place, do not attempt to force it home by tightening on the nut. Drive on the bolt head with a hammer while the nut is being tightened, and strain on the bolt will be avoided. It is an excellent plan in many places to apply a paste of grease and graphite to the bolt threads before screwing on the nut. This makes the end easy to turn and gives protection against rust.

The Engineers and Their Hosts of the Diamond and Goodrich Companies at the Akron Country Club.

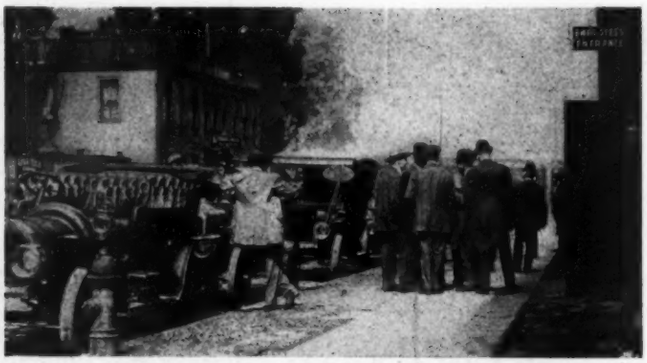
AUTOMOBILE ENGINEERS ENJOY OHIO HOSPITALITY

By CHARLES B. HAYWARD.

CLEVELAND, Sept. 19.—From early Friday morning until to-night, when the third quarterly meeting of the Society of Automobile Engineers formally broke up with the conclusion of the dinner tendered to the members by the Timken Roller Bearing Axle Company at the Courtland House in Canton, the visitors have been made to feel every moment of the time that they were in the hands of their friends, and the combined efforts of the entertainers left nothing to be desired. The result was one of the most enjoyable occasions that the members of the society have ever participated in. As the quarterly meetings only extend over two days, the first thing on the program was a number of factory visits during Thursday morning, in order to bring the business meeting and technical sessions in the afternoon. In a number of Winton, Stearns, Peerless and White cars, the party got away from the Hollenden about 9:30, the first plant on the list being the Winton, where the engineers were welcomed by Mr. Henderson. After having spent an hour or so there in examining the various factory methods employed, as well as the details of the design of the new Winton cars for 1909, a number of which were coming through, the cars were again taken for a visit to the plant of the Standard Welding Company, situated in another part of Cleveland.

The invitation to inspect the plant was extended by W. S. Gorton, general manager of the Standard Company, and after having viewed some of the various forms of electric welding as applied to rims, axles and tubular work, the regret that more time could not be devoted to the visit was universal, but in view of the fact that no less than six different plants, situated in widely separated parts of the city, had to be visited in a very limited time, it was impossible to devote more than passing attention to any one of them. From the Standard company's plant the cars were again taken for a visit to the Peerless factory, and at this, as well as at a number of the other plants visited, the fact that the slump of a year ago has been completely forgotten is more than evident in the number of large and permanent additions to the different factories that are now in course of construction, while the manner in which the 1909 cars are already coming through shows that the demand for new machines is making itself felt in no uncertain manner, early in the season. After having spent an hour or so at the Peerless plant, the cars were once more taken, and when the photographer had finished repeating his efforts of earlier in the morning, they were headed for the plant of the Hydraulic Pressed Steel Company, at the invitation of J. G. Foster, one of the members. It was intended to have had some of the special operations of automobile frame pressing on the huge hydraulic presses for which this plant is noted, under way during the visit, but owing to Cleveland's unusually early dinner hour, 11:30, this was impossible.

As a matter of fact, so much more time was spent in visiting than had been allowed for, that at the hour set for the lunch there were still two plants at widely separated points to be gone through, so that at the suggestion of J. G. Sterling, of the Stearns company, and chairman of the local committee, it was decided to omit the visit to the plant of the F. B. Stearns Company, owing to the great distance from the Hollenden. This gave more time to see the workings of the new White plant, though what was left constituted but a fraction of the time that could have been profitably spent there, as it was the universal consensus of opinion that nothing finer in the shape of systematic arrangement and factory organization had been seen. The members were met at the plant of the White company by Windsor and Rollin White, who, together with some of the technical members of the company's staff, acted as guides during the tour of the wide-spreading plant, all of which, with the exception of the large administration building, now nearing completion, is of one story and of the saw-tooth type of construction. The distinguishing feature of the lay-out of the plant, consisting of a 25 by 600-foot skylighted alley, by means of which any one of the numerous departments may be reached without going through any other, came in for a great deal of favorable comment, as did also numerous other features of the carefully arranged factory, which gave evidence of the pains spent in planning it so as to insure not alone the maximum capacity for turning out work, but likewise the greatest comfort and con-



Preparing to Depart from The Standard Welding Plant.

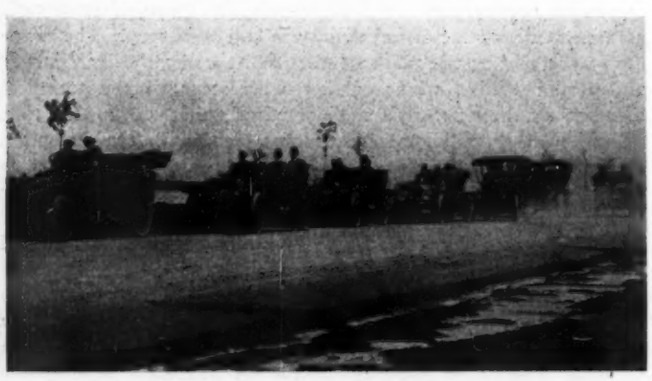
venience for the workmen. An opportunity was also presented to examine the details of the power plant of the White car for 1909, which has been greatly simplified by the adoption of the Joy type of valve gear, this permitting the shortening of the crankshaft to an extent where but two annular ball-bearings are now employed, in place of eight.

Following the visit to the White plant, the engineers were taken back to the Hollenden, where a lunch was served in the dining room of the Automobile Club of Cleveland, at the invitation of E. E. Allyne, of the Allyne Brass Foundry Company, Cleveland, and a member of the Society. Upon the conclusion of this, the members adjourned to the assembly room of the Hollenden for the business meeting and technical sessions.

The meeting being a quarterly one, there was but little routine business to come in for attention, the chief items being the rehabilitation of the committee on international memberships, owing to the resignation of the chairman, and the appointment of nominating and local committees—one to prepare a ticket for the annual election to be held in connection with the fourth annual meeting, which will take place in New York City during the shows, and the other to take up the matter of arrangements and entertaining on the same occasion. In order to provide an opportunity for the greatest possible number of members to attend the fourth annual meeting, both the business meeting and the technical sessions will be spread over two days on dates sufficiently far apart to enable those visiting but one or the other of the shows to be on hand.

Technical Sessions Were Interesting.

The business meeting was followed by the technical sessions, and although the number of papers presented, as well as the time available for discussion, was short, they proved of considerable interest and will doubtless lead to further contributions along similar lines. The first paper was on "The Limitations of the Universal Joint," by H. Vanderbeek, and consisted of a study of the characteristics of this familiar mechanism, as well as its use on the automobile, raising the question of the desirability of one or two universals on the propeller shaft of a car, from a theoretical as well as a practical point of view. In connection with his paper Mr. Vanderbeek had constructed an ingenious model to prove his theories, and this was shown and explained at the conclusion of the discussion, which brought out a number of interesting points.



A Park Stretch En Route to the Winton Factory.

Following this, there was presented by President Fay a paper on "What Carbon Does to Automobile Steel," in which the author showed at some length the desirability of low carbon steel for automobile work, particularly where dynamic stresses have to be borne, pointing out at the same time the relation of low-carbon, unalloyed steels to both high and low-carbon alloyed steels, where their value for automobile construction was concerned. The subject is one upon which a great deal has been written, though not from this particular point of view, and a discussion of the various points involved could be carried on almost indefinitely.

A paper on the subject of "Power Transmisison on the Automobile" was to have been prepared and read by L. M. Dieterich, but, owing to his illness, he was unable to finish the paper in time for the publication of the Transactions of the Society, or to attend the Cleveland meeting. The third paper presented was entitled "What Is the Best Timing?" and consisted of a translation from the French of *Omnia* (Paris), by Charles B. Hayward. The French author, Louis Lacoin, as the result of the appearance of a device known as the *Larrad,* made a critical study of the requirements of motor valve and ignition timing, comparing them both with the formula prescribed by Larrad, the inventor of the device, as well as with the standards adopted by no less than thirty well-known French builders, who have turned out thousands of motors in the past few years. The principal purpose of the translator was to bring up discussion and lead to further contributions on a subject that has been neglected to a very great extent by the members of the Society in the past, but as the paper itself showed, there are so many points involved, not a few of which require study for their proper consideration, that it is impossible to discuss the subject satisfactorily at any length except in the shape of written contributions, a number of which were promised. Following the conclusion of the technical sessions, the meeting was adjourned to reconvene at a dinner given by the Society to the visiting members, in the rooms of the Automobile Club of Cleveland, in the Hollenden.

Program of the Second Day.

At the invitation of the B. F. Goodrich Company and the Diamond Rubber Company the society made a visit to Akron, thirty miles distant, in order to inspect what are said to be the largest rubber works in the world. The concerns in question provided a special car on the electric interurban system, and this appeared in front of the Hollenden promptly at 7:40 a.m., according to schedule. The members were all on hand, and after a pleasant run of a little less than two hours, were landed right at the door of the B. F. Goodrich Company's plant, where a number of the technical staff of the works were impressed as guides in order to give the visitors as comprehensive an outline of the multitudinous operations carried on in a rubber manufacturing plant of such extensive proportions, as was possible in the limited time at their disposal, as both the Goodrich and the Diamond plants had to be visited between 9:30 and 12:30, the hour set for the lunch at the Akron Country Club. Urgent invitations from both the Goodyear and the Firestone companies to inspect the workings of their plants had to be declined for the same reason, as well as the fact that the former had not been received until it was too late to make any change in the plans for the trip to Akron.

The representatives of the local committee, consisting of Chairman Sterling and H. W. Alden, accompanied by Secretary Hayward, made a visit to the plant of the Firestone Tire & Rubber Company, where they were presented with an attractive souvenir in the shape of a neat stop-watch for each of the visiting members. To commemorate the date of the meeting and

visit, the watches are engraved "Firestone, September 19, '08," on the back of the case.

Even by going through "on the high" for every step of the way, it was wellnigh impossible to give the visitors more than a sketch outline of the great variety of rubber "industries" housed in the plant of the Goodrich company. They really deserve this title, as, apart from the fact that the production of an article having rubber as its foundation is the basis of all of them, they not only differ greatly, but require for their housing buildings that are respectable-sized factories in themselves. Needless to add, this is particularly true of the tire end of the plant, where the thousands of solid and pneumatic tires turned out every day have an enormous value. Few, if any, of the members had ever had an opportunity of visiting a tire-making plant, so that the numerous operations, and particularly the preparation of the crude material, was found to be extremely interesting. Starting with the making of solid tires, the visitors were given at least a brief view of every one of the twenty-odd departments, which, in the aggregate, employ between three and four thousand operatives the year round, before bidding farewell to the Goodrich establishment and walking across the intervening space that separates it from the Diamond Rubber Company's works.

It might be thought that seeing one rubber factory was equivalent to seeing all, but where both solid and pneumatic tires are concerned particularly, each plant has methods and arrangements of its own that become of more than the usual interest when contrasted with the different methods of accomplishing the same ends to be seen in the other plants. On this account, it was generally regretted that a whole day could not have been spent in Akron. However, the factories not only close for the day on Saturdays at 11:30, but it was planned to spend the afternoon in Canton, at the invitation of the Timken Roller Bearing Company, a dinner at the Courtland following the inspection of the plant.

At the plant of the Diamond company a good idea was obtained of the various processes through which Diamond tires go before emerging as the finished article, ready to be applied to a car, and the members were greatly interested in the large amount of special machinery used in the manu-

Mr. Henderson of the Winton Company Acts as Host.

The Camera Man Got Busy at the Peerless Plant, Too.

Leaving the White Factory for the Hollenden Headquarters.

The Timken Company Entertained the Engineers During Their Stay in Canton.

facture of other articles of rubber, and particularly that employed for insulating electric cables. Tire-making, as a matter of fact, is almost entirely a matter of hand work, which, together with the high grade of the rubber necessarily employed, accounts for the great expense of manufacture.

Immediately upon the conclusion of the visit to the Diamond plant, a number of cars were boarded for the run to the Akron Country Club, where the members were the guests of the two companies at luncheon. Following this, the special electric car was again boarded for the run to Canton.

At the terminus of the line the visitors were met by a special delegation from the Timken plant, and a number of automobiles, and as a prelude to the visit to the former were given a view of the famous McKinley monument, for which Canton is noted. The various operations involved in the manufacture of the well-known Timken roller-bearings were then inspected, as well as the die-forging of single-piece front axles, manufacture of gears and other processes necessary to the turning out of complete front and rear axle units, the new one-piece pressed-steel trussless rear axle driving unit that is being made for the 1909 model cars coming in for a great deal of favorable attention.

After having made a pretty thorough inspection of the workings of the various departments of the Timken plant, the visiting members were guests of the company at a dinner given at the Courtland house, Canton, upon the conclusion of which the meeting came to an end. A vote of thanks was passed and the secretary was instructed to forward a copy of the resolution to each of the many companies that had done so much to entertain and instruct the visiting members. These included the Winton Motor Carriage Company, F. B. Stearns Company, Peerless Motor Car Company, Standard Welding Company, Hydraulic Pressed Steel Company and the White Company, in Cleveland; the B. F. Goodrich Company, Diamond Rubber Company, Firestone Tire & Rubber Company and Goodyear Tire & Rubber Company, in Akron, and the Timken Roller Bearing Company, in Canton.

ENGLISH DAIMLER ADOPTS KNIGHT VALVELESS MOTOR

CHICAGO, Sept. 21.—Announcement was made to-day by Knight & Kilbourne, of Chicago, manufacturers of the Silent Knight valveless motor, that a deal had been consummated in England by Charles Y. Knight, designer of the engine, whereby the Daimler Motor Co. will equip all its cars in 1909 with the Silent Knight motor. Also it is announced that the same engine will be used by the Minerva people in Belgium, that deal having been closed some time ago. Other foreign concerns are investigating the merits of the idea and it is said it is not at all improbable that the Chicago-made engine will be adopted by some of the leading makers on the continent. At the present time the Panhard people are conducting a series of tests at their factory, and it is said that so interested are the Fiat makers that they have sent their designers to Paris to watch the experiments at the Panhard factory. The makers of the Mercedes, too, have asked to be shown the merits of the idea.

The Silent Knight motor first was brought out in Chicago by Knight & Kilbourne, who put it in the Silent Knight car built by them for a couple of seasons. Early in 1907 Mr. Knight succeeded in interesting the Daimler people in his engine, and last November he went to England to demonstrate it at the Daimler works. He has been there since, in which time the Daimler engineers have gone over the engine, and, while retaining the cardinal principles, they have thoroughly remodeled the motor. As is well known to those who examined the Chicago motor at the shows, the principle embodied in the engine is the elimination of the ordinary tappet valves and the substitution of sliding parts by means of two sliding sleeves working between the waterjacket and the cylinder proper and operated by an eccentric motion, opening ports in the cylinder walls as the surfaces pass over each other. The head of the motor is detachable and efficiently water-cooled, and the spark plug is placed exactly in the center of each head. Each cylinder of the motor has an explosion every two revolutions instead of one at every revolution; otherwise it is credited with having all the good points of the two-stroke engine without any of its drawbacks.

With the Silent Knight engine gas is drawn in on the induction stroke, the inlet port being closed by the sliding sleeve and it is asserted the inlet and exit of the gases through the ports are easier and more direct than through the ordinary valve opening.

The remodeling of the Silent Knight motor by the English engineers, aided by Mr. Knight in person, brought about the elimination of a third port, which had been used as an auxiliary exhaust outlet at the bottom of the stroke, but which had been deemed unnecessary by Designer Knight long before he went to England. This was the principal change made by the English, who now claim that the engine is really silent in action, for, with the exception of the exhaust, there is nothing to make noise, the movements being of a gradual and sliding order, and there being no tapping movements or spring return operations.

HORSE-POWER RATINGS OF AUTOMOBILE MOTORS

By THOS. J. FAY, President Society of Automobile Engineers.

TO derive the horsepower ability of a motor in the absence of an actual test, is but to make an attempt to anticipate what the actual test would naturally disclose. It follows, therefore, that the actual test is the one best way: all others are simply approximations, and nothing more. Some engineers employ very simple and abbreviated empirical formulæ, in order that the attempt at the approximation will be the least possible trouble. In one case that came to the notice of the author, the error was 50 per cent the wrong way, i. e., the motor was capable of delivering 50 per cent more power than the makers thought it would.

The necessity of parading an overgrown horse power rating is not apparent, since if the motor is big enough to do the work, the smaller it happens to be, in any given case, the better for the owner of the car it is used to run.

The most abbreviated formula yet offered, is that used by the *A. L. A. M.*, as follows:

$$H.P. = \frac{d^2 N}{2.5}$$

in which

$H.P.$ = the alleged horsepower of the motor;
d^2 = the square of the bore of the cylinder in inches;
N = the number of the cylinders;
2.5 = a constant said to serve the purpose, in view of the actual ability of motors, and in further view of the similarity of the several makes of motors.

This formula says that a motor, of any stroke now used in automobile motors, will cover the requirements on the ground that the several motors are so near in point of stroke, as not to make a material difference in the actual power delivered by them.

Taking a given sized motor, as a four-cylinder, 4 x 4 in., bore and stroke of cylinders and pistons respectively, the rating would be:

$$H.P. = \frac{4^2 \times 4}{2.5} = 25.6$$

It is assumed that the speed will be the maximum possible; the highest attainable under which the product of the torque and the speed will afford the maximum possible. To obtain any kind of accuracy, quite a number of assumptions would be necessary, to say the least. But if all the motors are very much alike, and all are compared by the one formula, results a little high, or a little low, as the case may be, a correction can be introduced at any time, and will serve equally for all. No sooner is a rule promulgated than there is a desire to get around it. This rule, for instance, is the root of the innovation known as the "short stroke" motor. When the rule was promulgated, the majority of motors had strokes not far from 5½ inches, with a few longer, and some with a shorter stroke.

Importance of the Stroke as a Factor.

That the stroke does enter into the problem, can scarcely be denied, and that the stroke is now shorter than it would have been, in the absence of the rule, is a matter that can be taken for granted. Yet, it is possible the short stroke is a very good thing, from more than one point of view. The motor is lighter, the cylinder castings more regular and the difference in power is not so great as to defeat the main objects. As before stated, if a motor is of the proper size to do its work, it is the right size to use, on the ground of economy. If a motor is so large that it cannot be run at its economical load, its higher full load efficiency is valueless, since in service the necessary full load will not be available. A smaller and probably less efficient motor might serve with better results, for the very simple reason that it may be run at its most economical load.

An empirical formula, taking the stroke into account, might read as follows:

$$H.P. = \frac{d^2 (l\,k)\, N\, S}{10^5} \times f = \text{approximate horsepower,}$$

in which:

d^2 = the square of the bore in millimeters;
l = the length of the stroke in millimeters;
k = a constant, depending upon the length of the stroke;
N = the number of the cylinders (four-cycle motor);
S = angular velocity in revolutions per minute;
f = a factor of compression;
10^5 = a figure of convenience;

If the bore is not over six inches (152.4 mm), the values of k might be taken thus:

k = unity for six-inch stroke;
k = .90 for a five-inch stroke;
k = .80 for a four-inch stroke;
k = .70 for a three-inch stroke;

The exact values of k would certainly be subject to several conditions and to a series of variables besides. In a matter of this sort, however, many of the conditions tending to shift the k values would cancel themselves in service. These values are also dependent upon one other consideration that cannot well be eliminated, i. e., the speed of a four-inch stroke motor will be higher (considering the highest value of speed and torque) than the speed of the six-inch motor, and it follows that the actual reduction of power due to shortening the stroke is in a measure compensated for by the increase in speed, but the compensating factor will not suffice to wholly counteract the influence of the shorter stroke.

This counter influence, however, does so materially aid the process, as to warrant one in taking the k values as given, rather with the hope that, in the better class of motors, the k values might be increased somewhat. It must not be assumed, though, that the mere fact that a short stroke motor would run at a very high speed, is a warrant for so doing; there is a limit in practice to the speed *per se;* and that is the limit to take into account in deriving any empirical formula, on the ground that such a formula is but a practical device, at best. It would be out of the question to attach a theoretical speed to a practical formula and call the whole practical.

Effect of Stroke on Compression.

The values of f will change with the compression, and with the fuel, considering a given compression. If gasoline is taken as the fuel, and the compression ranges between 75 and 95 pounds per square inch absolute, the f values for the conventional types of four-cycle automobile motors might range about as follows:*

f = 5 at 75 pounds per square inch (absolute) compression;
f = 5.5 at 85 pounds per square inch (absolute) compression;
f = 6 at 90 pounds per square inch (absolute) compression.

In these deductions will be found ample room for controversy, for reasons that, in a theoretical sense at any rate, are perfectly good. On the other hand, it is a fact that motors, as they actually obtain, will not do better than the values of f as here given. But the author attaches more importance to the effect on the speed of the motor, as a result of higher compression, than he does to the direct influence of that compression. In other words, if the compression is low, a relatively slow speed motor will result due to ignition troubles, more than to anything else, at the higher speeds. But if the compression is high, approaching the point of pre-ignition, the ills that such a condition will engender must be borne. Increasing speed, unfortunately, increases the richness of the fuel and increases the hydrogen present. If it is true that different mixtures of a given fuel will perform differently, it is well within the bounds of good practice to say, equal mixtures of different gases will not afford equal results. It is plain then that a high compression can result in increased power, and would influence the f values, more than the

* The values of f given are on a basis of the actual compression, at the speed of the motor, at which the power is delivered. Cold compression is quite another matter.

amount given, were it not for the fact that the conditions to be maintained are beyond the bounds of common practice.

In a racing car, for illustration, it is possible to utilize the higher compression because the driver is skilled and the carburetion is looked after in the most careful manner. The more complete formula, taking the same problem as before, would afford results as follows:

$$H.P. = \frac{100^2 \times (100 \times .80) \times 1500 \times 4 \times 5}{10^9} = 24$$

which is a very high value. Built as some motors are, the factor of compression might well be 4 instead of 5. Certainly, the average motor of this size uses enough fuel to enable it to deliver the power stated, and if the thermal values, usually taken for motors, have any underlying reason for their existence, it is within the range of probability that the values given are approximately right. It is the factor of compression that must be adjusted, as between the respective motors and the author cannot accomplish such a task, merely in the act of devising a formula. This statement strikingly illustrates the earlier one, i. e., "the actual test would naturally disclose the actual horse power of a motor."

Conditions Affecting the Torque.

The horsepower of a motor increases in direct proportion to the speed, if the torque holds constant. It is unfortunate that the torque does not remain constant, nor does it increase with the speed. Indeed, it falls off with alarming rapidity under certain conditions as:

(*a*) If the compression is low and the mixture leaks by the valves or the piston.
(*b*) If the valves are too small.
(*c*) If the valves are not properly timed.
(*d*) If the cooling system is defective, a common complaint.
(*e*) If the spark is not properly timed, assuming it is otherwise adequate.

If it is true the torque will not hold constant, with increasing speed, this fact must be taken into account in any formula, but since it is the lowering compression that effects the torque, it is the factor of compression that must be adjusted in an empirical formula.

The torque of a motor, which for convenience may be called the "mean effective pull in pounds," at unit radius (one foot), may be known as follows:

$$H.P. = \frac{2\pi\left(\frac{H.P. \times 33{,}000}{2\pi SP}\right)\left(\frac{H.P. \times 33{,}000}{2\pi RP}\right)\left(\frac{H.P. \times 33{,}000}{2\pi RP}\right)}{33{,}000}$$

hence:

$$P = \frac{H.P. \times 33{,}000}{2\pi\left(\frac{H.P. \times 33{,}000}{2\pi SP}\right)\left(\frac{H.P. \times 33{,}000}{2\pi RP}\right)}$$

Simplifying the formulæ will result in the following:

$$P = \frac{H.P. \times 33{,}000}{2\pi RS} = \text{pull in pounds, at radius taken;}$$

$$R = \frac{H.P. \times 33{,}000}{2\pi PS} = \text{radius;}$$

$$H.P. = \frac{2\pi RSP}{33{,}000} = \text{approximate horsepower;}$$

$$S = \frac{H.P. \times 33{,}000}{2\pi RP} = \text{angular velocity in revolutions per minute.}$$

The Working Requirements Are Numerous.

There would be no need to set down the above formulæ, either in the involved or in the simplified form, except to show the source of the simplified form and to point out that in mathematics the abstract is ever available, to no practical purpose, since to know the value of the horse power or the torque, one must first determine their values by an actual test. Having made tests on the various types of motors, however, one may then assume values to the extent necessary to obtain the remaining values. If we assume the radius as unity, it does not become necessary to solve for the same; likewise, if we know the maximum speed permissible in practice, this may be assumed, if it is known that the motor will perform at such a speed.

For a motor to merely turn over at a given speed is not enough; it must deliver power in a manner to satisfy the formula, else the speed assumed will introduce a fallacy. The only way to be certain that the speed will be that of the maximum power, is to test the type of motor under actual service conditions sufficiently to establish the facts. The relation of speed to torque, in actual practice, is such that the maximum power does not, as a rule, obtain coincident with the maximum speed or with maximum torque. As the formulæ show, the power is in direct proportion to speed and to torque; as the speed increases, the power increases, if the torque remains constant, which is not true in practice, as the following records of tests will adequately illustrate:

SPEED AND TORQUE TEST.

150 mm stroke and bore Fiat motor, four-cylinder, four-cycle.

Speed in r.p.m.	Pull in lbs. at 1 ft. rad.	Speed × Torque.
1,090	341	= 1,090 × 341 = 371,690
1,412	315	= 1,412 × 315 = 444,780
1,800	262	= 1,800 × 262 = 471,600
1,920	210	= 1,920 × 210 = 403,202

As will be observed, the maximum value, due to multiplying speed and torque, fell at the point next to the lowest established by the test, and with the speed next to the highest observed during the test. A number of trial tests were made, to show that no better results would follow at other higher or lower speeds. Increasing the speed beyond the highest speed given above resulted in an alarming reduction of the torque, while at lower speeds than the lowest recorded here, there did not result such an increase as to compensate in any measure for the reduction in speed. The general behavior of the motor was such as to lead one to the conclusion that no further display of skill would enhance the results in any way.

Where the Empirical Formula Fails.

No empirical formula would predict any such results, because in this case the maximum power was produced at a piston travel of 1,800 feet per minute, which is 800 feet per minute higher than the empirical formula contemplates. The formula of the A. L. A. M. would fix the horsepower-rating of this motor as 57.6. To show how much motors can vary, another torque test was as follows:

SPEED AND TORQUE TEST.

165 mm bore × 170 mm stroke, four-cylinder, four-cycle motor.

Speed in r.p.m.	Pull in lbs. at 1 ft. rad.	Speed × Torque.
800	446	= 356,800
900	390	= 351,000
1,000	350	= 350,000

Below 800 r.p.m. there was no increase in torque to compensate for a reduction in speed, hence it was fair to take 800 r.p.m. as the speed of maximum power. This was a case in which the maximum power was developed, below the piston travel (1000 ft. per minute) assumed in the case of the A. L. A. M. formula. Both of these motors were designed to do just what the tests showed; one as a motor for racing cars, in which the power of the higher speed could be utilized for a short time, and the other for a racing motor-boat, in which the propeller could not (at that time) be designed for a higher speed. Both were used in automobile work, but only one could claim a place in boat work, that is, on a basis of the delivery of the maximum power. In marine service, the last-named motor would deliver the maximum available power at a lower speed, because it was designed to do so. How, then, can any simple formula serve for all motors, in view of such marked differences? Indeed, the differences noted do not cover the range, because both motors cited were of the finest of the time, and indifferently designed motors would not do nearly as well as either one of them.

(*To be Continued*)

GETTING ACQUAINTED WITH A CARBURETER

By HERBERT L. TOWLE.

MANY pages have been printed on the subject of scientific carbureter adjustment. Nevertheless, the man who has installed a carbureter of unfamiliar make is apt to find all his carefully studied principles oozing away as he heatedly grinds away and the motor fails to start. It was easy enough to preserve a scientific frame of mind so long as he had some other fellow's trouble to deal with, but it is quite another matter when repeated breathless spinnings of the crank have brought no result, and in sheer demoralization one is tempted to suspect spark plugs known to be clean, batteries known to be fresh, and spark coils which were in perfect working order up to the instant the old carbureter was taken off the car.

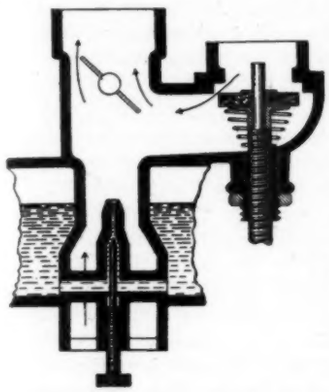


Fig. 1. — Typical Automatic Carbureter. Primary air opening is fixed. A needle valve controls the spray orifice. Spring tension and lift of auxiliary air valve are separately adjustable.

The human mind is incapable of retaining more than a limited number of ideas at once, and the stress of one dominant sensation or experience may for the moment drive out of mind other ideas which in calmer moments would be accorded their due weight. It follows that when you are telling your neighbor how to adjust his carbureter you can split hairs all you like, but when you are adjusting your own your formulas cannot be too simple. Even after the engine has been started your troubles are by no means over. You adjust the carbureter so the engine runs well on the floor, and find that when you take the road the car will not get out of its own way. You adjust to give respectable speed, and find that you cannot start. Then you begin all over again, and possibly find that when the car runs fast on the level it pulls badly on hills, or that when it takes grades nicely the motor overheats at high speed, and drinks more gasoline per mile than you had believed was possible. Or perhaps you are totally unable to get an explosion. Worn out with your exertions, you shut the tank valve and sit down to smoke a cigar. Then you try again, following apparently the same routine, and the motor starts off as if nothing was the matter.

The nonautomatic type may be ignored, and the automatic carbureter may be broadly classified into the auxiliary air valve and the "puddle" types. Owing to certain characteristic differences in behavior it will be best to treat these types separately. Inability to start the engine, to speed up, or to run as slowly as one would like may all be due to either too little or too much gasoline. To determine which is the cause one must be guided by other and sometimes very subtle symptoms. Of the grosser symptoms of poor mixture it may be said that overheating, if not due to slipping of the fan belt or clogging of the water passages, is caused generally by too much, rarely by too little, gasoline. Black smoke indicates a very considerable excess and popping in the carbureter indicates too little.

As the first essential is to get the engine started, we will consider that first. With any spray carbureter, the mixture for starting must be obtained by priming. It is, however, possible in this manner to make too lean or too rich a mixture; and if the adjustments are decidedly wrong the mixture formed on the first few revolutions will be so bad that the motor will stop. Sometimes the float is too high or too low, and the gasoline overflows continually, or is so low that great suction is required.

It is best to observe whether gasoline drips after the float chamber has had time to fill. If no dripping occurs, depress the float, and on the first sign of dripping crank the engine immediately. If it does not start, prime the carbureter again. If this fails, shut off the gasoline at the tank, and if there is a drainage outlet from the float chamber draw off a couple of teaspoonsful of gasoline. This weakens the mixture. Repeated cautious experimenting in this manner will soon establish the priming required to start the engine when cold. When it is warm the gasoline evaporates more rapidly, and caution is required not to prime too much. Many carbureters with a small primary air passage will start the engine without priming.

If the engine starts, but immediately dies down, try holding the float down. If the cause of dying down is too weak a mixture, this will keep the engine going. See that the gasoline level is not more than 1-10 inch below the spray nozzle. If the engine still stops, the mixture is too rich.

If the carbureter drips when standing, the float valve should be investigated. If pressing it shut stops the dripping, the float is too high. If the dripping persists, the valve leaks and must be ground to a fit, preferably using pumice stone, since emery is liable to embed itself in the brass. Occasionally a float and float valve are so arranged that the valve, although tight in one position, may slant over a trifle and leak from that cause. Such carbureters are a nuisance, since the gasoline level constantly varies. The automatic air valve is not supposed to open when the engine is run slowly with the clutch released; consequently we have first to deal only with the adjustment of the spray orifice or of the primary air opening. Some carbureters have a fixed primary air opening, and control the spray orifice by a needle valve, while others have a fixed spray orifice and control the primary air intake. Reducing the primary intake produces a greater suction, and is equivalent to opening the spray orifice. Adjusting to keep the engine running on a low throttle is therefore a simple matter. Let us assume the engine to run smoothly on a low throttle. The spark is now fully retarded, and with the clutch still disengaged the throttle is slightly opened. The engine should accelerate smartly, and should attain at least its maximum road speed on about one-eighth of the full throttle opening. The auxiliary air valve should open, but not to its full extent, as the engine is not taking full charges. If it opens fully, the spring is too weak, and its tension should be increased.

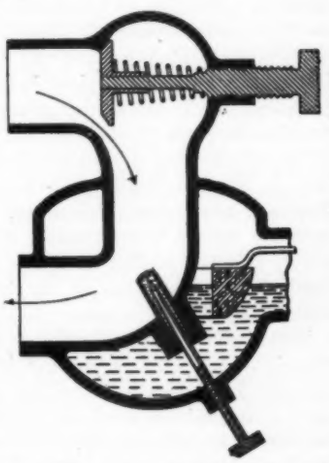


Fig. 2.—A simple form of Carbureter. All the air enters at one point and passes around the spray nozzle, but the inlet opening is enlarged by the automatic air valve as the suction increases, thus preventing the suction from becoming excessive. The spring tension, but not the lift, of the auxiliary air valve is adjustable.

The second step is to try the car at moderate speeds on the road, and here the real process of adjusting begins. Let us suppose—what is likely to be the case—that the engine is sluggish. Without stopping the engine, try slight changes in the spray orifice or primary air inlet. First reduce, then increase the richness, and note the effect on the car's performance on level ground. An adjustment will presently be found with which the car runs well at ordinary speed. Now turn your attention to the auxiliary air valve, and bear in mind that you do not yet know that the mixture at ordinary speeds is correct; you may be driving with the throttle wider open than it should be. Note whether the radiator seems to heat up on the

level ground, also if there is a tendency to weakness and overheating on hills. These symptoms indicate that the mixture is too rich. Notice whether the auxiliary air valve opens sufficiently (*i.e.*, from one-eighth to one-fourth inch, depending on the size). Adjust the stop to increase the lift slightly, and slacken the spring. Remember, however, that a change in the spring tension has a greater proportional effect at low than at high speeds. This is very important. If easing the spring helps matters at medium but not at high speeds, note whether the auxiliary valve strikes the stop before the engine reaches its maximum. If so, the high speed mixture is too rich. If the construction is such that the valve can open further, adjust the stop accordingly. If, however, it flutters and behaves irregularly, the lift must be restricted. Increase the spring tension again and reduce the spray orifice. If there is no needle valve controlling the spray, reduce the primary opening so that a larger proportion of the total air stream will go through the auxiliary valve. These changes will weaken the mixture more at high than at low speeds, which is desired.

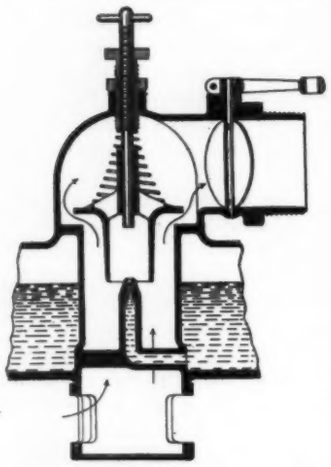


Fig. 3.—In this type of carbureter all the air enters by one inlet, but part of it is shunted around the spray and does not take up gasoline. The nozzle has no needle valve, but the size of the air inlet is adjusted by a fixed shutter.

Suppose, on the other hand, that instead of overheating the motor was simply weak. It is a good guess that the mixture is too lean. Possibly the auxiliary valve spring is so weak that the valve opens fully at low speeds; or perhaps the lift is too great for the size of the engine. It is not usually difficult to modify the low-speed adjustment so that the car gives its maximum power and speed, and this should be the third step. There is less room for uncertainty here than about the low-speed adjustment, since unless the mixture is actually about right the maximum speed of the car will not be reached A good test of the mixture is the response to the spark advance. If the mixture is bad the spark must be advanced considerably to produce any noticeable acceleration, whereas with the correct mixture any change in the advance is at once felt, and the maximum advance is not needed except at maximum speeds. Even more marked is the response to the throttle when the latter is nearly closed, and this is therefore the best low-speed test.

When the high speed adjustment has been found, the fourth step is to see whether the car will do equally well at ordinary speeds. If it does not, one can generally tell whether the mixture is too rich or too lean by recalling what was done to make it correct at high speeds. For example, suppose the improvement at high speeds to have been obtained by increasing the auxiliary spring tension. This enriched the mixture at high speed, but enriched it more than proportionately at lower speeds as well. It is possible that the auxiliary spring is wound from too light wire or has too many turns, so that it is under too much initial tension, and therefore does not yield to the suction as soon as it should. Before changing the spring, however, try slackening it to its earlier adjustment, allowing the valve to open under moderate suction, and open the spray orifice slightly or reduce the primary air inlet. This will still give the desired mixture at high speeds, but will give a leaner mixture at low speeds. Suppose the mixture was found to be originally too rich at high speeds, and was corrected by slackening the spring or increasing the auxiliary valve lift. If the change was only in the lift the mixture at lower speeds has probably not been affected. If, however, the spring has been slackened, the mixture may be too lean at low speeds, owing to the air valve opening too soon. One way to correct it would be to use a spring having a larger number of coils, but a satisfactory result may usually be reached by increasing the spring tension and reducing the spray orifice.

Where the carbureter is of the puddle type the physical manifestations of rich or lean mixture will be quite the same. It has certain individual peculiarities, acquaintance with which will smooth the owner's way considerably. This type of carbureter differs from the spray type in having a U-shaped mixing chamber, in the base of which a puddle of gasoline about 3-32 inch deep is maintained by an annular float. As this puddle is supplied by gravity, a weaker suction will produce a mixture than where the gasoline must be both lifted and atomized by suction. As the puddle is constantly supplied, it will evaporate continuously as long as the tank valve is open, and when the motor is not running it may produce a mixture too rich to ignite, particularly if the engine be hot. If the float valve be so high that flooding occurs, this effect will result very quickly. If, therefore, a carbureter of this type does not start the engine immediately on priming, the chances are that the mixture is too rich. The tank valve should be shut and a little gasoline drained from the float chamber, when the motor will start easily.

This type of carbureter is very sensitive to changes, both in the float level and in the needle valve adjustment. A single turn of the screw adjustment of the float valve is equivalent to wiping out the puddle or doubling its depth. The easiest way to ascertain the correct adjustment is to connect up the carbureter with the intake in such a position that one can see the puddle, either directly or by a small mirror and electric flashlight. When approximately the right level has been obtained, further adjustment will be a matter of marking the float valve stem and turning its threaded adjustment not more than one-eighth turn at a time until the correct position has been found. If the float is too high the engine will be hard to start, and will accelerate badly, overheat and show poor power on hills. Once worked up to speed it may show excellent power. Partly closing the needle valve will improve the power at medium speeds, but will reduce it somewhat at high speeds. If the float valve is too low, the engine will start easily by priming but will develop poor power at ordinary speeds. If the needle valve is opened this may be partly corrected, but at the cost of excessive gasoline consumption at high speeds. Generally speaking, if the gasoline level is materially too low, the power developed will be poor at almost any speed, and it will probably be hard to run slow in high gear. When the correct float adjustment has been found, the needle valve must be very carefully adjusted. A sixteenth of a turn will make a vast difference in the power. Once properly adjusted, the engine will be very flexible to close the tank valve whenever the engine is stopped.

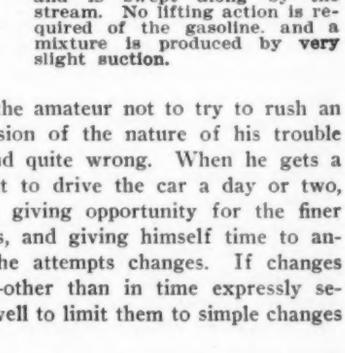


Fig. 4.—A "Puddle Type" Carbureter. A gasoline puddle in the base of the V-shaped mixing chamber is fed by gravity and is swept along by the stream. No lifting action is required of the gasoline, and a mixture is produced by very slight suction.

It is an excellent rule for the amateur not to try to rush an adjustment. His first impression of the nature of his trouble may on further trial be found quite wrong. When he gets a fairly good mixture it is best to drive the car a day or two, carefully noting its behavior, giving opportunity for the finer symptoms to show themselves, and giving himself time to analyze them critically before he attempts changes. If changes must be made on the road—other than in time expressly selected for that purpose—it is well to limit them to simple changes in needle valve adjustment.

LETTERS INTERESTING AND INSTRUCTIVE

MORE ABOUT THE GRADE QUESTION.

Editor THE AUTOMOBILE:

[1,549.]—Kindly pardon me for taking issue with you on the grade question. I contend that the base line of measurement must be the incline up which you are going, not the horizontal; 100 per cent. is straight up and down; 100 per cent. must be all there is of anything.

You want the grade of a certain hill. You provide yourself with a 10-foot pole and a spirit level, go on the hill, and select an average grade. Lay down your pole and mark each end; bring the lower end up horizontal by the aid of the spirit level; measure up to the pole from the lower mark, perpendicular to the pole. This distance will give you a basis from which to figure the grade.

Take your diagram and measure up 110 feet. Have you got a 110 per cent. grade? Did you ever eat 110 per cent. of a pie? Please think this over and let me hear from you again.

Vergennes, Vt. A. D. EVARTS.

Your method is a perfectly good one, but it is not the one in general use. The difference is that you reckon by the sine of the angle instead of the tangent. Used with the ten-foot pole and spirit level, the method we gave is even simpler in

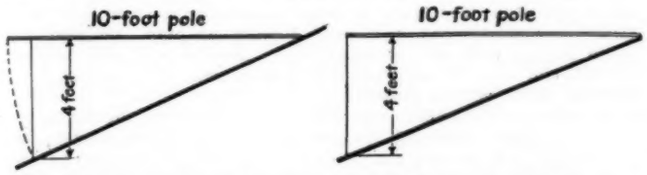


Diagram Illustrating Two Methods of Reckoning Grades.

application than yours. Rest one end of the pole on the ground and get it horizontal by means of the spirit level; then measure to the earth perpendicular to the pole, and the distance in feet, multiplied by ten, will be the percentage of the grade. By this method, of course, straight up and down is a grade of infinity per cent., which certainly is much closer to being "all there is of anything" than a mere paltry 100 per cent.

As to the percentage question, did you ever make 110 per cent. profit on anything you sold? We know some people who do. And though we may never have eaten 110 per cent. of a pie, we have eaten some that felt like it afterwards.

CONCERNING VALVE PORT ARRANGEMENT.

Editor THE AUTOMOBILE:

[1,550.]—In an engine with valves on opposite sides two ports are arranged for, but I understand with valves in the head only one port is used. Is this correct? If so, how is the port arranged for the inlet and exhaust gases? SUBSCRIBER.

Milwaukee, Wis.

All engines have two valve ports, one for the inlet and one for the exhaust, whether the valves are on opposite sides, the same side, or in the head. You are probably thinking of the Franklin valve system, in which the two valves are concentric and appear like one; but there are two ports there just the same.

IS A SMOKY EXHAUST EVER NECESSARY?

Editor THE AUTOMOBILE:

[1,551.]—I have noted recent inquiries on the subject of lubrication, and while I do not intend to go further along the same line, the question has suggested itself to me, whether it is ever necessary to run a car with a smoky exhaust from this cause, in view of the great amount of attention the smoke nuisance is now receiving.

Philadelphia, Pa. B. HARKER.

The only time it is necessary to use an excess of lubricating oil is when the engine is new, or when it is being put to an excessive strain, such as occurs in racing. Smoky exhausts are coming to be regarded more and more as an indication of carelessness and poor driving. We print elsewhere in this issue some advice from a prominent manufacturer of lubricating oil which should be interesting in this connection.

TO FIND QUANTITY OF GASOLINE IN TANK.

Editor THE AUTOMOBILE:

[1,552.]—I was pleased to see in the September 17 issue of The Automobile an arangement for telling how much gasoline there is in a tank, and thought I would send in my method for the benefit of your readers. I purchased for five cents in a drug store a glass pipe about 1-4 inch diameter with a 1-8-inch hole, and about 2 inches longer than the depth of the tank. By putting this down into the tank and placing my finger over the top, then withdrawing the tube, all the gasoline that entered the hole is held there by atmospheric pressure, showing immediately the depth of the liquid in the tank. When the finger is removed, the gasoline runs out. I put two small leather loops on the underside of my seat over the tank, and push the glass tube into them, where it is always ready for use. H. B. P.

Hartford, Conn.

Your method is a very good one, infinitely to be preferred to the usual stick. A glass tube is frequently used in chemical experiments in this way to dip out a small quantity of a liquid, but we do not remember having seen it adapted to automobile use before.

CRITICISM OF TWO RECENT ANSWERS.

Editor THE AUTOMOBILE:

[1,553.]—I feel that I must take exception to two replies which you made in last week's paper, first, which was to J. M. Butler & Son, and, second, to party signing "Brakes." Now, as I have been a constant reader of your journal from its inception, I wish it understood that I am answering only in a friendly spirit, and feel it is my duty to do so, as both answers are, as given by you, incorrect, and I earnestly trust to see them corrected in your next issue.

In regard to any modern two or four-cylinder touring car being able to travel easily at a speed as low as 10 or even 5 miles per hour. I claim this is impossible on the high gear or direct speed, and is possible only with six-cylinder cars, unless perfectly level or down grade is being traveled. I do except cars geared lower than the average custom and some light runabouts, but the average touring car when it gets down to 10 miles per hour with ordinary gear ratio of 3 to 1 on the direct drive, has its engine turning so slowly that if anything like a grade is being ascended the car will positively not pick up without at least slipping the clutch, or is quite more likely to stall entirely, should occasion occur to quickly get out of the way of some team or passing machine. You say you do not understand where such a question ever arose from. Please allow me to say that by making this remark you clearly show that you have never driven or rode with a driver to any great extent, otherwise you surely would not have so expressed yourself.

Your answer to "Brakes," in which you said dissimilar metals are used in brakes because they possess a greater coefficient of friction, is also wrong, as a little reasoning on your part will clearly show from the fact that all plain bearings employ dissimilar metals, such as Babbitts, bronze, or some other alloy, in which runs a steel shaft. If these metals possessed a very great coefficient of friction, they would not be used, as you surely will admit in choosing materials for bearings friction is not sought for. A very plain experiment why dissimilar metals are used in bearings is thus: If we hold two comparatively coarse files together and try to move them back and forth, great effort is required; if one file is quite fine and the other coarse, the effort will be much less. Now, should we view a finished shaft through microscope, same will be seen to contain a very rough and irregular surface, the softer material will also show a roughness, but of a much finer grain. The shaft represents the coarse file and the soft metal the fine file. Now, the sole reason that metals of the same kind are not used in brakes is because they would wear out too rapidly, just as they would if used for bearings, and a brake is nothing more than a large-sized bearing carrying a heavy load. Above illustration appears in George M. Hopkins' Experimental Science and other standard works above criticism.

Phoenixville, Pa. LEWIS T. RHODES.

If you will work out the exact number of revolutions per minute of the engine of a car geared 3 to 1, with 34-inch wheels, running ten miles an hour, you will find that the speed is probably higher than you thought.

$$\frac{5280 \times 10 \times 12}{1} \times \frac{1}{34} \times \frac{7}{22} \times \frac{3}{1} \times \frac{1}{60} = 296 \text{ r.p.m., approximately.}$$

Substituting 32-inch wheels for 34-inch wheels, the result is approximately 315 r.p.m. If you own a car with an engine in it which cannot run as low as 300 r.p.m. under load, we would advise you to get a new one. The minimum speed under load is usually taken at 150 r.p.m., and this was what we figured on in saying a car should run as low as five miles an hour on the high gear. As to our personal experience, we are willing to undergo any reasonable test, but we hardly think that enters into the question.

We admit that all plain bearings at present in use employ dissimilar metals, but the conclusions you draw therefrom are erroneous. Babbits and bronzes are used because their natural coefficient of friction is so low that their combination with a steel shaft gives less friction than a bearing in which both members are steel. A babbitt shaft in a babbitt bushing would give still less friction, but, unfortunately, shafts cannot be commercially made of this material. Your illustration of the coarse and fine files holds only in case the bearing is not lubricated, as with proper lubrication the oil forms a film between the two metals, and their surfaces do not actually come in contact.

We protest at your definition of a brake as a large bearing carrying a heavy load. How about the shaft bearing of an ocean-going steamship, two or three feet in diameter and carrying five or ten thousand horsepower? On the other hand, the coaster brake of a bicycle is only a few inches in diameter.

DIMENSIONS OF STRANG'S ISOTTA RACER.

Editor THE AUTOMOBILE:

[1,554.]—I would like to draw your attention to some inaccuracies which I do not think can be blamed on the typographer. The last issue of your usually excellent magazine had a statement which conflicted with a previous one so markedly that I had to compare the two. I will quote them and allow you to judge for yourselves.

On page 595 in the issue of April 30, describing the machines which took part in the Briarcliff, the first words are: "According to A.L.A.M. rating, Strang's Isotta was the highest powered machine on the course, its cylinder diameter of 145 mm. being equivalent to 5.7087 inches, which gives 55.1 horsepower." Further down, in the same column, concerning wheelbase: "Strang drove a 118-inch machine." In the table on page 597 the Isotta is credited with a bore of 5.7087 inches and stroke of 4.7245 inches. Now, in the issue of September 10, page 359, your technical editor states: "Strang's Isotta three-time winner has a four-cylinder engine, the dimensions of which are the metric equivalent of 5 7-8-inch bore by 5 1-2-inch stroke, rated at 60 horsepower." Further along: "The wheelbase is 122 inches."

Lastly, I would like to ask you which type of car Guyot drove in the French voiturette race—a single or a double cylinder. I know one of the Delages was a single cylinder and the rest double. On page 38, July 9, you say a double cylinder, and on page 84, July 16, you head an article "Single-cylinder 50-miles-an-hour Voiturette Winner." CHESTER S. RICKER.

Ithaca, N. Y.

We are unable to give you any authoritative figures as to the dimensions of Strang's Isotta, as the manager of the Isotta Import Company declines to make any statement on the subject. The official declaration of the bore at the time of the Briarcliff was 145 mm., equivalent to 5.7087 inches, as in the paragraph you quote, and this is doubtless correct. The figures for the stroke and the wheelbase were probably estimates.

Guyot's Delage was the single-cylinder one of the team. The error in the first article probably was made in the confusion attendant upon getting off the first cable reports after the race, and was corrected by the mail account in the next issue.

CONCERNING THE "3-PORT" 2-CYCLE MOTOR.

Editor THE AUTOMOBILE:

[1,555.]—Up to recently I have been under the impression that the two-cycle motor was a single type, but have frequently come across the term "three-port," and also note that some concerns advertise that their engines are absolutely "valveless," while others do not. Can you enlighten me on this point? INQUIRER.

Plymouth, O.

The two-cycle motor as largely employed in small marine work at first, was of what is known as the "two-port" type, in that a port is employed for the admission of the fresh charge, and another for the escape of the exhaust, while a check valve was used to imprison the mixture in the crankcase at the end of the suction stroke. In the "three-port" type, a port is used for the latter purpose as well, thus eliminating the check valve, making the engine valveless. It was found that the check valve constituted one of the greatest evils of what was known as the two-port engine, through the frequent uncertainty of its working, and when it was successfully eliminated by the use of a third port, the makers naturally sought to call attention to this advantage by terming the engine "valveless." There are some three-port engines which do not answer this requirement, though they embody nothing in the shape of a valve as present on the four-cycle type. In strict terms, however, a port covered or uncovered by the piston is as truly a valve as the usual poppet type.

ONE WHO CAN DRIVE AT FIVE MILES AN HOUR.

Editor THE AUTOMOBILE:

[1,556.]—"The Lowest Speed of an Automobile," is noted in your issue of September 10. I have a Franklin runabout, and on bad roads, such as the Plank Road between Jersey City and Newark, I run at a rate of less than five miles an hour. A short time ago when in Connecticut I went astray, and in taking a short cut to get back to the right road, I went over a road so rough and hilly and sandy that if the road to Hades is anything like it there will be no travelers that way. I drove sometimes on first and sometimes on second speed, and, when I could, on high. On high gear I did not go over five miles an hour, usually four, or even less. At the end of a 55-mile trip the engine was running easily and sweetly, with nothing overheated.

Be good to the engine and you will be good to the whole car, tires included. Overload the car and overwork the engine, and you won't have to get out of the car to look for trouble; it will come to you. Some people know well enough that two locomotives are often required to pull a train, and yet seem to think there is no such thing as overload to the engine of an automobile. I am told I am lucky, but I am just good to the beast, and the beast is good to me, that's all. GEORGE E. LONG.

Jersey City, N. J.

TRUE STORY OF THE DARRACQ LITIGATION.

Editor THE AUTOMOBILE:

[1,557.]—A few weeks ago there appeared in your publication an article relating to the court proceedings brought by some stockholders against A. Darracq & Company, Suresnes, France, asking for the dissolution of that company. Upon making inquiries of the company regarding this matter I was officially informed by the chairman of the board of directors as follows:

"The articles you refer to relate to some proceedings taken by a few stockholders in France at the instigation of the Marquis De Dion to have it declared that A. Darracq et Compagnie is irregularly constituted under French law. The judgment of the French Court was given on August 5, when the proceedings were dismissed and the claimants condemned to pay the expenses in addition to 5,000 francs damages, for bringing an action without reasonable motives, the Marquis De Dion being personally condemned in 1,000 francs damages. The Court intimated that a higher damage would have been given, but it thought the injury to the company had been more moral than actual. If you could get this result inserted in any of the papers which have noticed the matter I should be much obliged."

I should be very glad to have you give this the necessary publicity in the next issue of your magazine.

G. M. MACWILLIAM,
New York City. Darracq Automobile Parts.

A HELPING HAND FROM MONTANA.

Editor THE AUTOMOBILE:

[1,558.]—Noting letters 1509 and 1515 in the issue of August 20, I think I can help the inquirers. With regard to the first, would call the attention of the two writers to a book advertised in your columns that is certainly all that one could ask for if he is looking for good, practical information with regard to the automobile, namely, "Self Propelled Vehicles," by J. E. Homans, at $2.00. Possibly this book would cover the ground that is required. This is certainly the best treatise I have seen and I have quite a number.

As to letter 1515, possibly one of the following firms may be able to fill the bill for Mr. Carruthers: E. F. Hodgson, P. O. Box 112, Dover, Mass.; Springfield Portable Construction Co., 57 Waltham avenue, Springfield, Mass.; North American Construction Co., Bay City, Mich. "GLAD TO HELP."

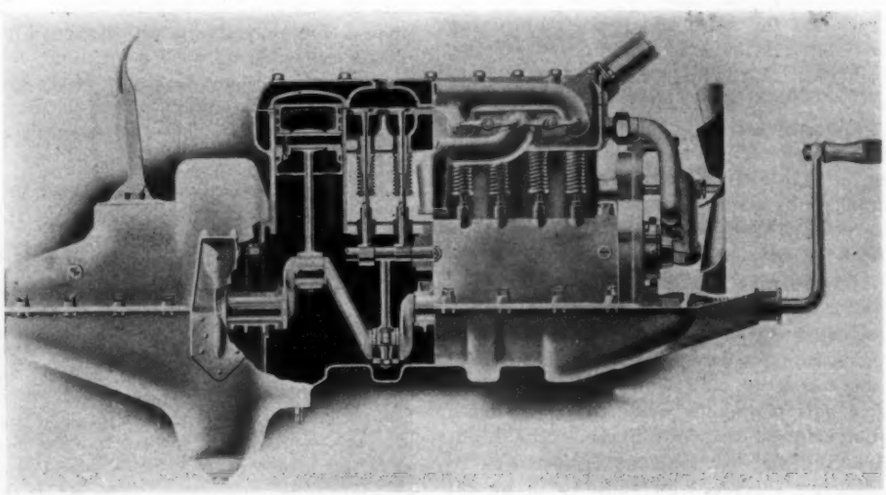
Butte, Montana.

WHEN the now familiar Ford runabout appeared three years ago, the Ford Motor Company announced that it would soon bring out a light touring car at a correspondingly low price. Work on this model has been going on steadily ever since. The car was ready last January, but it was decided to test it in actual service before putting it on the market. The cars built at that time have now been in use over nine months, giving opportunity for improvements and refinements as occasion was found for them. While the general appearance of the touring car recalls very strongly the runabout, it is nevertheless an entirely distinct design. The stroke of the engine has been lengthened to 4 inches and the layout considerably changed. There is also an entirely new system of rear spring suspension. The wheelbase is 100 inches, weight 1,200 pounds, and the price $850. Deliveries begin October 1.

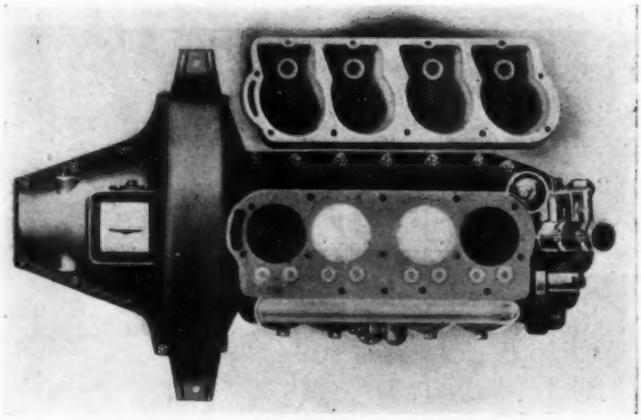
Motor.—The motor of Model T—as the light touring car is officially designated—is, of course, a four-cylinder, four-cycle, and is rated at 20 horsepower. Bore and stroke are 3¾ and 4 inches respectively. The cylinders are cast in one block, with the water jackets and the upper half of the crankcase integral; but the water-jacketed cylinder head is an entirely separate unit, easily removed when desired for cleaning, adjusting, etc., with the breaking of but one connection. The advantages of this design are obvious; anyone who has had to clean the carbon out of a cylinder or grind in a valve on a motor of the usual construction will recognize them immediately. By removing 12 bolts, all four cylinders and pistons and the eight valves are instantly accessible. The disadvantage appears to be that it introduces a ground joint in each cylinder head. It should be remembered, however, that the two smaller joints in each cylinder, for the valve covers, are eliminated. Further, this design lends itself admirably to the scheme of water circulation. There is one inlet, at the front of the cylinder casting, and one outlet, at the front of the head casting; but the only communication between the jackets of the cylinders and those of the heads is at the extreme rear, so that the water is forced to circulate through all parts of the jacket, and cannot by any possibility "short-circuit."

All valves are on the right-hand side and are actuated from one camshaft, which is cut from the solid with cams integral. The push rods have flat, mushroom ends to bear on the cams. The inlet and exhaust manifolds are separate and are held to the cylinder casting by four yokes and bolts.

The upper half of the crankcase, as mentioned above, is of cast iron integral with the cylinder block; the lower half is of pressed steel, extending back under the flywheel and change-gear, and forward to support the starting crank. It touches the frame at three points, and carries the entire power plant. The first point of suspension is at the bearing of the starting crank, the extension of the case resting on the middle of the front cross member of the frame; the other two points are one on each side of the flywheel, where pressed steel brackets, riveted to the case, extend out to the frame members on either side. It will be noticed that the lower half of the case is not, as usual, a mere oil pan, and cannot be removed without removing the whole power plant from the frame; instead, access to the connecting rods is provided through large hand-holes in the upper part of the case, on the left side. Flywheel and change-gear are completely enclosed by the pressed steel case underneath and a light cast cover above.



Complete Power Plant of the Ford Touring Car, in Partial Section.



Motor from Above, with Cylinder Head Casting Removed.

Motor Accessories.—The carbureter is a new design float-feed automatic, with a quintuple ball air valve. The valve is controlled by a small lever on the dash, so that it is possible to make all adjustments from the seat. The gasoline tank is cylindrical, of 10 gallons capacity, and is mounted directly on the frame under the front seat.

One of the most radical features of the new car is the ignition. This is by magneto exclusively, and the magneto is embodied in the flywheel as an integral part of the motor. It has no commutator or brushes, no gearing, no contact points, no moving contacts, no moving wires; the rotor is a part of the flywheel, and the stator, carrying the coils in which the current is generated, is a stationary spider carried on the inside of the flywheel casing. The slightest movement of the flywheel generates current enough to make a powerful spark. The timer is mounted on the front end of the camshaft, and the spark coils and switch are on the dash.

The water-cooling system consists of a vertical-tube radiator of the same familiar design as used on the runabout, an eight-bladed fan and a centrifugal pump. The fan and pump are mounted on the same shaft, the former, of course, in front, and are driven by a pinion meshing with the two-to-one gear; they are supported and centered by bolts projecting from the gear casing. The direction of the water circulation through the cylinder and head castings has already been described. Piping is almost completely eliminated, there being only three short connections—bottom of radiator to pump, pump to cylinder casting, head casting to top of radiator.

Lubrication is entirely by splash. The lower part of the pressed steel casing which encloses the crankcase, flywheel and change-gear is filled with oil. The flywheel, revolving in this oil, throws it against the sides and top of the casing into ducts which feed front and back to the motor bearings, the gears and the universal joint. Each connecting rod big end dips into a separate oil well and splashes oil to the pistons and cams. All overflow from these wells returns to the large well under the flywheel.

Transmission.—The change-gear is of the planetary type, which the Ford Company has always persistently advocated. It gives two speeds forward and a reverse. On the high speed the whole weight of the gear revolves with the flywheel; on the low speed and reverse the planetary gears and pinions come into action, but as none of these are of the internal type, there is very little noise or vibration. The clutches are low speed and reverse are fiber-lined steel bands; these grip their drums smoothly, and when released spring away, insuring positive action and no waste of power from dragging. A third band forms the foot brake. The high-speed clutch is of the multiple disc type, so designed as to give the maximum bearing surface, and running in an oil bath. The reserve power and flexibility of the motor call for very little use of the gears. The low speed is rarely used except for the first 20 or 30 feet, when starting from a standstill; on the high speed the car can climb any ordinary hill and run at from 3 to 40 miles an hour.

From the change-gear the power is transmitted through the single universal joint and the drive shaft to the bevel gears on the rear axle.

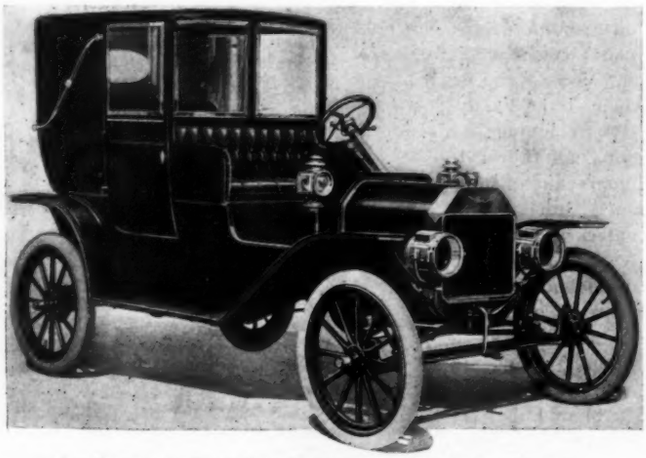
Running Gear.—The rear axle is the usual live type, and is combined with the torsion tube, which encloses the drive shaft, according to the Ford "three-point system." The front end of the torsion tube forms the ball of a ball and socket joint, the socket being firmly supported by the rear end of the pressed-steel undercasing of the power plant. This tube transmits the entire driving thrust from the axle to the frame, none of it being taken by the springs. Moreover, the tube is braced by two other lighter tubes, which extend from behind the ball and socket joint diagonally to the rear spring seats on the axle, so that it is not necessary to make the parts of abnormal size to insure rigidity. The universal joint of the drive shaft is, of course, centered inside the hollow ball of the joint. By this construction the rear axle has perfect freedom to adapt itself to the road surface, while the rear spring system may be made light and flexible and its resiliency fully utilized.

This construction is practically repeated in the front axle. Here there is no transmission of power to be cared for, but similar brace tubes run from the spring seats and meet in a ball joint carried by the steel undercasing at a point just forward of the flywheel. The axle itself is a one-piece forging of vanadium steel, and is straight from spring-seat to spring-seat.

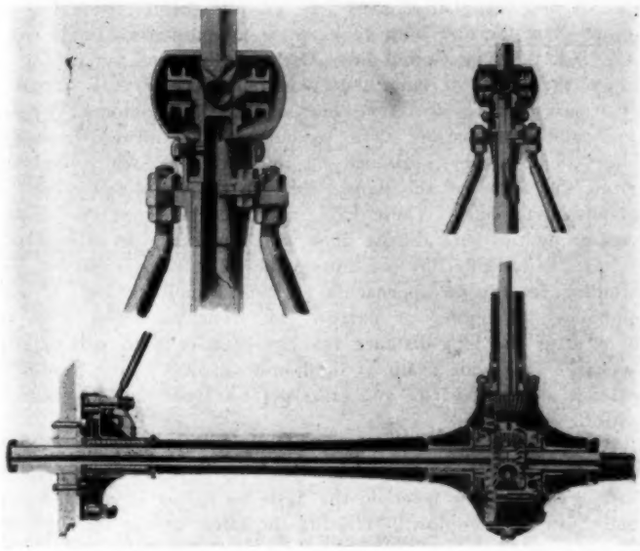
The entire spring system consists of but two semi-elliptic springs, one in front and one in rear, both inverted and transverse. Their ends are shackled on the axles close to the wheel hubs, and at the middle they are held to the front and rear cross-members of the frame, respectively, by stout steel straps. The cross-members are of an inverted U-section, in which the springs fit snugly. The attachment of the front spring is well shown in the front quartering view of the car with landaulet body. One advantage of this arrangement is that the weight of the car is brought out close to the wheel hubs, thus relieving the axles of much strain.

The wheels are artillery, with 12 spokes, 30 inches in diameter. The rear wheels are keyed to the ends of the live axle shafts; the front ones run on ball bearings. Tires are 30 x 3-inch front and 30 x 3½-inch rear.

Control.—Perhaps the first thing that the average driver would notice on seeing the car is that the steering wheel and levers are on the left-hand side. This arrangement has been frequently tried and as often abandoned; its adoption on this car certainly shows the Ford Company's unwillingness to be bound by any tradition. Theoretically, of course, since vehicles meeting on the road pass to the right, the



The Ford with Landaulet Body, for Taximeter Service.



Ford Three-Point Drive System—Rear Axle and Joint.

driver should sit on the left, so that he may see the road beyond. This involves the disadvantage that he must operate the side levers with his left hand, which many people find extremely inconvenient. However, on the Ford these levers have the simplest possible forward and back movement, and are rarely used except for starting and stopping. One controls the high speed forward and the reverse, the other the emergency brakes, which are internally expanding on the rear hubs. Two pedals operate the slow speed forward and the service brake respectively.

The steering column is raked at a sharp angle and carries the irreversible gear at its top, in a small circular case just under the wheel. The throttle and spark levers are mounted on the column on the right and left, respectively, where they can be reached by the index fingers of each hand, without releasing one's hold on the wheel-rim.

Bodies.—The standard light touring body seats five persons comfortably. Its lines are simple and graceful, well accentuated by molding. The hood retains the runabout design, square with beveled corners, and harmonizes perfectly with the body. Practically the entire weight is carried between the axles, the rear seat overhanging very slightly and the hood not at all; this is permitted on the comparatively short wheelbase—100 inches—by the unusually compact motor. No announcement has been made regarding colors or finish.

In addition to the touring car body, the chassis will be supplied with coupé and taximeter cab bodies, listing at $950 thus equipped, and with private town car bodies at $1,000. These will be ready November 1. Runabout and roadster models will be announced later.

Vanadium Steel.—This material is used for all shafts, gears, axles, springs, and many smaller and comparatively unimportant parts. The alloying of steel with vanadium has only recently become commercially possible. Until within three years ago the world's output of the pure metal was less than 200 pounds a month; in consequence its price was many times that of gold. But since then a large deposit of vanadiferous ore has been opened up in South America, and it is now on the market at about half the price of silver. As it is used only in "homeopathic doses," vanadium steel can be made at about the same cost as the best grades of chrome-nickel steel. It machines as easily and uniformly as low-carbon steels, and works beautifully under the forging hammer and dies, while in dynamic properties it is claimed to be much superior to any product hitherto tried. Its use throughout the car is a point on which the Ford Company lays great emphasis.

A BUDGET OF NEWS FROM THE PINE TREE STATE

PORTLAND, Me., Sept. 21.—With the coming of September the summer season in Maine may be said to be over. It has been a very successful one in the automobile industry, better than was expected in view of the great financial disturbances of last October. All during last winter there was much talk among prospective buyers, for the financial stringency did not seem to hit this section very heavily. Cars of all kinds sold readily in Maine this year, but the smaller type seemed to be in much the greater favor, though the large touring cars were not by any means neglected.

During the past season there have been hundreds of visitors to the State. Complaints have been general in regard to the conditions of the roads in the western part of Maine, but once east of Portland, the tourists have had few kicks to register. The Glidden tour and the Ideal tour, both of which passed through Portland, proved the main events of the year.

Registration Figures Tell a Story.

No better idea of how the automobile trade has grown can be obtained than from the figures of registration at the office of the Secretary of State in Augusta. From the figures on file it is learned that the total amount received in fees for the registration of automobiles from the time the law went into effect, June 1, 1905, to September 1 of the current year, was $6.108; from licenses issued to operators, $7,126; from registration of motorcycles, $662; from licenses issued to dealers, $790; making a grand total of $14,686.

As might be expected, the business for the past month approaching as it does the latter part of the season, shows a falling off compared with that of some of the other months of the year. The number of automobiles registered during August was 93; the number of licenses issued to operators was 113; one license was issued to a dealer and twenty motorcycles were registered. The amount received in fees was as follows: Registration of automobiles, $186; licenses to operators, $226; dealers' licenses, $10; registration of motorcycles, $40, a total of $426.

The total receipts in fees for the past eight months of the current year are as follows: Registration of automobiles, $1,632; for licenses to operators, $1,862; dealers' licenses, $200; registration of motor cycles, $206, making a total of $3,900.

An index of the rush during the spring is obtained from these figures of the registration of automobiles during the first eight months: January, 8; February, 6; March, 36; April, 129; May, 169; June, 297; July, 168; August, 93.

Licenses to operators during the same period were issued as follows: January, 9; February, 5; March, 35; April, 135; May, 190; June, 230; July, 214; August, 113.

In the registration of motorcycles no applications were received until March, when four certificates were issued. Monthly registrations since that month have been as follows: April, 24; May, 17; June, 18; July, 20; August, 20. The number of licenses issued to dealers during the past eight months was 22.

A Rush of Hunters to the Maine Woods.

Every year an increasing number of automobile parties passes through the lower part of the State bound to the hunting camps in the northern woods. Many of the machines carry full camping outfits, including tents, cook-stoves and provisions. The roads are none too good, but this only furnishes an additional spice of adventure.

LAMPS WITH BESNARD SYSTEM OF ECLIPSING.

By RICHARD H. WELLES.

The use of acetylene gas for use in automobile headlights is undoubtedly the most popular form of light for automobile use at this time. Their efficiency in the country, where a long and penetrating beam is necessary, has been proven satisfactorily, but for city use they have been a constant source of criticism

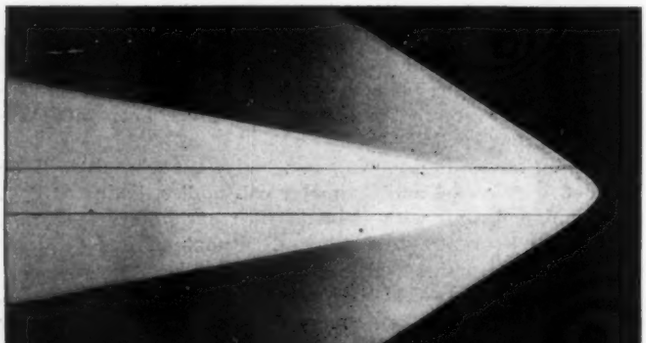


Fig. 1.—Showing double rays and two distinct fields of light.

because of the blinding glare coming from the parellel beam of the lens reflector. This objectionable feature has been overcome in the Solarclipse lamps, manufactured by the Badger Brass Mfg. Co., in this country. Several bills are up before the different State legislatures which, if passed, will compel the user to adopt a lamp embodying the "eclipsing" feature.

The Besnard system has been very popular abroad, and the United States patent rights are now owned by the Badger Company. This system seems to have solved the problem of headlights, for in this lamp are embodied all the essentia ldetails of the popular Solar light, besides having an arrangement attached by which the longer and blinding rays may be shut off at will by simply working a lever on the dashboard. Acetylene lamps for road use have two sets of rays, one from the lens mirror—the objectionable one for city use—and the other are the diffused or short distance rays, coming directly from the flame. If the long, penetrating rays could be shut off we would find that the shorter rays would answer every purpose for city streets. This the Solarclipse lamp and shutter does.

The manner in which the light is distributed may be seen in Fig. 1, which shows the double rays—two distinct fields of light. The first are the more intense, parallel, or long-distance rays, more powerful, and of greater utility to the driver, but blinding to the approaching road users. These rays consist of the rays

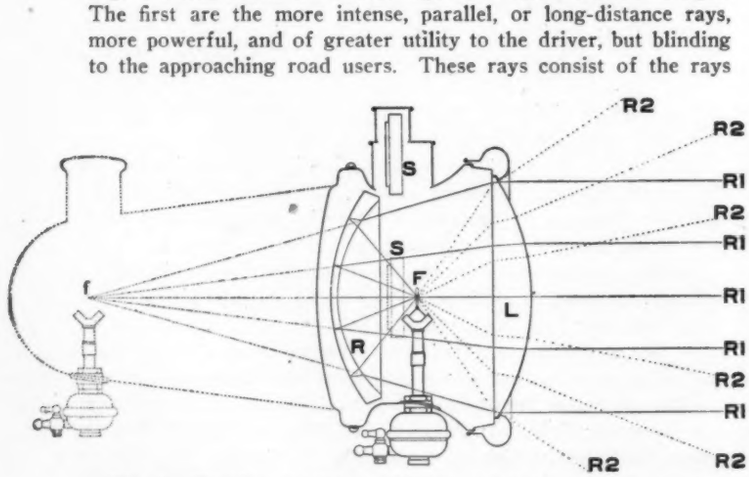


Fig. 2.—Showing special combination of the hyperbolic curve of the reflector and the plano-convex lens.

of light which eminate at the back of the flame *F*, and, striking the reflector *R* of hyperbolic curve, are reflected and directed against the plano-convex lens *L* in front of the flame, by which they are focused and refracted in long parallel rays of great penetrative power, shown by the lines R^1, Fig. 2.

This special combination of the hyperbolic curve of the reflector and the plano-convex lens permits the use of a lens of large diameter and long focus in a comparatively small lamp, see Fig. 2. The dotted lines back of the reflector in Fig. 2 show the depth of lamp that would be necessary to obtain a like powerful result if we did not use this patented hyperlenticular combination. The second are the diffused or wide, short distance rays, produced by th light rays, which eminate from the front of the flame, and are thrown directly on the plano-convex lens. These rays, magnified and rendered much clearer by the lens, diffuse at a wide angle at the side of the vehicle, as indicated by the dotted lines *R 2*, Fig. 2, and are not blinding to anyone approaching. Refer again to Fig. 1, and eliminate the lighter or narrow ray. The remaining field of light after the long-distance ray has been eclipsed will plainly appear. This wide beam of light now thrown by the headlight extends about 35 yards, and gives perfect front and side illumination.

When the shutter (*S*, Fig. 2) is up in the heat hood, held there by a spring, the light from the lamp is ready for the road, but by working the lever on the dash the spring is released and the shutter comes down, eclipsing the effect of the lens mirror at the back.

The mechanism which operates the shutter consists first of the operating lever at the back of each lamp (see Fig. 3) which,

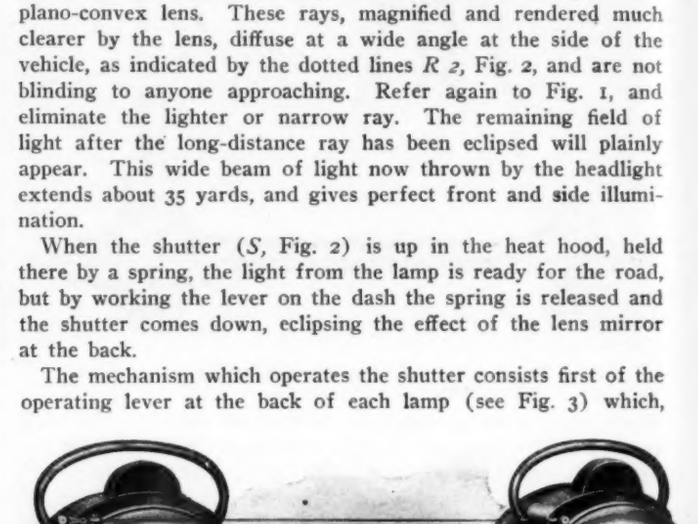


Fig. 3.—Mechanism which operates the shutter.

when pulled down, brings the shutter into eclipsing position. For use on a machine, so that the two lamps may be operated at once, the levers, of the two lamps, are connected by a piece of piano wire. By the use of Bowden flexible wire the right-hand lamp may be connected to any convenient place on the dash or the steering post.

EXAMINATION OF PREMIER CENTURY CAR.

INDIANAPOLIS, IND., Sept. 19.—After eight hours of careful and thorough examination of the Premier "100 miles for 100 days" car, David Beecroft and Berne Nadall, of the Chicago Motor Club, reported that every part examined was found to be in exceptionally good condition. Not a single case of breakage or distortion due to faulty workmanship or design was discovered.

The members of the technical committee were passengers in the "Century" car on the last 100 miles, and were told to take charge of it for that day. At the completion of the test, which took place at Michigan avenue and Twenty-third street, Chicago, the two odometers showed 12,189.6 miles and 12,246 miles respectively. The last 43 miles was made use of by the committee for observations on the running and general performance of the car, partly over boulevards and partly over rough country roads. An excellent opportunity was afforded for noting the working of the motor, the efficiency of the brakes, and the general stability of the car. There was not a single indication of looseness or derangement in the running gear or steering.

After the end of the run the car was completely disassembled and all the working parts were examined. The final conclusion of the committee was that the car could endure a repetition of the same mileage without the necessity of overhauling.

HOW ORVILLE WRIGHT'S AEROPLANE FELL

WASHINGTON, D. C., Sept. 21.—Wright brothers' aeroplane, which everyone believed would be bought by the United States government, September 28, lies a pile of broken sticks and torn cloth in the hangar at Fort Myer, Va. A guard watches over the remains and warns with the danger of court-martial anyone who wishes to enter the building. The man who has stood in the world's limelight for the past two weeks, who has been accepted the world over as the subjugator of the upper air, lies in the post hospital, so severely injured that he may not be on his feet again for twelve weeks. Lieut. Thomas E. Selfridge, of the Fifth Artillery, has with his life paid the first toll of the government for success in aerial navigation.

Like those of the public fortunate enough to see the Wright aeroplane aloft, the United States government, represented by the Secretary of War and the Board of Tests of the Signal Corps, feels satisfied that the aeroplane that came to earth is a success. The government wants another like it, and Orville Wright will deliver it. But the inventor, lying in the hospital, already sees where he can improve the type of the aeroplane, and he will be thinking and planning the three long months that he must lie inert. Then we may expect something better.

In the meantime, the Board of Tests expects that along will come A. M. Herring, from his shop off Broadway, about Sixty-sixth street, New York. He is due in Washington October 13. The government expects him with a great deal of interest, for much has been written about him, and he himself has said much about his ability to navigate the air successfully—automatically, he would have us believe.

That this terrible catastrophe of last Thursday will retard aviatory progress for some time, those who see below the surface do not believe. Wilbur Wright, with a machine almost identical to that of Orville, will not delay his demonstrations abroad. The followers of sky motoring consider this accident to be an incident of success, and will act accordingly; that is to say, the work will go on almost as if nothing happened.

It would require a volume to enumerate with explanations the theories that have already been advanced as to just how the break in the propeller occurred, and the causes. All that anyone knows is that the accident was caused by a broken propeller, except Wright; for he probably has figured it out. It is on what Wright said, shortly after his wounds were dressed, in word that he sent to his elder mechanic, Taylor, that the following opinion is based.

Wright said: "Look at that transmission."

There is no "transmission" on the aeroplane such as we have on the automobile. In automobile parlance, Wright would have said the "drive." For he referred to the two chains, one longer than the other, that transmit by chain the power of the motor from the crankshaft to the propeller shafts, one on each side of the afterpart of the aeroplane. These chains cross each other in performing their functions. Not an expert on aviation has seen this feature of the Wright brothers' flyer for the first time but that he has exclaimed, "Oh, cross-chain drive!" One can readily see that the crossed chains had a tendency to pull the propellers together. After the machine struck the ground it was found that the shaft of the broken propeller was badly bent inwards, that is, toward the opposite propeller. The angle-iron that had supported it was almost completely loose, and entirely from the bottom fastening.

The propellers used were not "new," except in the sense that they had not been used before at Fort Myer. They had been tested previous to the fatal run. But they were each eight inches, some say a foot, longer than those used for the record flights that made the world believe in the simple-looking machine.

From the appearance of the fracture there seems to be no way in which the accident could have occurred unless this angle-iron loosened, allowing the propeller to slip inward, drawn by the chain. The other propeller, driving toward it and upon it, snapped off the end, and the spectators saw something that looked like a piece of paper flutter down to earth.

Wright heard and felt the shock, perhaps; at any rate, he reached for the cord above his head and shut off the gas supply of the motor. Then he apparently endeavored to glide down to the earth. For 40 feet, perhaps, he was partially successful. He said afterward to Taylor that if he had been twice as far from the ground he would have been able to regain control of the machine and to have landed easily on the skids. But this does not seem probable, for the aeroplane at the time of the accident was slightly inclined to manoeuver a turn. When Wright lowered the front balancer for the down glide, the machine seemed to slip off sideways in the air, at an angle of 25 degrees. Thirty-five feet from the earth it swung around on its already begun turn, and at the same time pointed more directly downward, so far, indeed, that the surfaces of the superimposed plans no longer pressed against resisting atmosphere. Finally, these planes were at right angles with the ground, the port end nearest the earth, the forward balances straight out ahead. It is probable that the port side and the forward balancer struck earth first and perhaps minimized, though slightly, the force of the contact for the main body of the machine, carrying Selfridge and Wright.

The passengers could not have jumped from the machine on account of the cross wires hemming them in on all sides. They might have slipped down between the wires and their seat, but there could have been no advantage in it, and they probably did not attempt to do so. When found, Wright's arm was about Selfridge. It appeared that he had endeavored to hold the lieutenant in the seat before the crash came, but as the machine came down head-on, the men probably left their seats, were pressed against the wires, while the apparatus fell on top of them.

HOW WILBUR WRIGHT IMPRESSES THE FRENCH PUBLIC

LE MANS, Sept. 17.—We are on the eve of great doings here. Wilbur Wright has been progressively training for flights that it is firmly believed by his followers will eclipse all previous records in heavier-than-air experiments. His best performance up to date is 19 minutes 48 2-5 seconds, made at an average height of 40 feet and over a distance estimated at 14 miles. The flight was made in the early morning in perfectly calm weather, Leon Bollee, M. Landry, Paul Jamin and Baron de Sennevoy being present to officially time the performance. There was apparently no reason why Wilbur Wright should have come down; his engine was running well, his gasoline supply was plentiful, and his handling of the machine was perfect.

Later in the day a second flight was commenced, but after 3 minutes 21 seconds in the air a gust of wind struck the aeroplane and carried it towards a group of trees. Wilbur Wright sought to overcome the shock; he raised the apparatus, attempted to turn short, but did not succeed, the left wing striking the ground. The engine was still running, but Wilbur Wright immediately cut out and settled down on an even keel a little more roughly than usual, it is true, but without inflicting any damage. When heeling over, however, the wing had suffered somewhat, the one which came in contact with the ground being the same that had been damaged on the racecourse a few days before. A couple of days will be required to make the necessary repairs,

after which it is confidently believed that an attempt at long flights will be made.

There is a Wright and an anti-Wright camp in France, the former believing that the American aeronaut has left all other experimenters far in the rear, and the latter party persisting in dubbing him a bluffer or an acrobat. There has been a change of opinion in the various newspapers regarding the stranger from Dayton. When the first flights were made the praises of the Yankee were chanted in chorus: the others were children, they had been merely playing at flying, they went aloft like a scared hen, they were incapable of action in a wind. Now that has changed and the criticisms are being directed towards the retiring aeronaut at Le Mans. It being impossible to deny that Wright knows how to fly, the criticism is put forth that his machine can only be managed by a person having gone through a long period of training, that it is too slow, and that no improvements have been made on it for several years. Probably the explanation of most of the journalistic criticism can be found in the fact that after the first favorable accounts Hart O. Berg neglected to hand out publicity money. When the broad hint was given that there should be some recompense for so much favorable comment, the equally broad reply was given that no comments were asked for and none would be paid for. Since then certain journals can see nothing good in the Wright brothers' apparatus.

Wilbur Wright Unofficially Breaks Time Record.

LE MANS, Sept. 21.—This afternoon Wilbur Wright took the world's record from his brother with a flight of 1 hour, 31 minutes, 51 seconds, covering a distance of about 60 miles. After three false starts the machine was successfully launched at 5:15. He at first showed unusual prudence, flying so low that he seemed almost to skim the earth, but on the thirteenth round he rose to a height of about 60 feet. The sun was just setting and the aeroplane made a picture which time and again drew cheers from the 10,000 spectators. In the gathering darkness the machine kept steadily on, with the regularity of an express train. Not until long after night had fallen did Wright shut off his motor and come lightly to the ground. The official measurement is only 66.6 kilometers, being taken between the flags at the ends of the field; in reality the distance was greater. That part of the flight before sunset, 53 minutes, is accepted in the contest for the Michelin prize.

A FRENCH NATIONAL AERIAL LEAGUE TO BE FORMED

PARIS, Sept. 17.—All France is alive with enthusiasm for aerial navigation. The public interest in balloons, dirigible airships, aeroplanes, aeronautical motors and their auxiliaries is patent to any observer; a further and more convincing proof of the desire of the French nation for supremacy in the air is to be found in the formation of the National Aerial League, a body founded by some of the most distinguished aeronauts and their supporters in France, and which, it is hoped, will group together hundreds of thousands of French citizens. The object of the league is declared to be to encourage aerial navigation in all its forms. With the funds provided by members it will hold competitions for aeronautical motors, the forms of aerial propellers, researches in the best forms of aeroplane wings, long-distance flying competitions, etc., in a word to encourage by means of competitions and prizes, every form of aerial navigation.

To make the league truly national, the annual subscription has been fixed at one dollar per member. On such a basis it is estimated by the organizers that 50,000 members will be obtained during the first month of existence of the league, giving a working fund of $50,000. In addition to ordinary members, life members are received on payment of a substription of not less than $20; special prizes, to be named after their donators, will be offered whenever a sum of not less than $200 is paid into the treasury.

Those responsible for the formation of the league are M. Deutsch de la Meurthe, M. Archdeacon, Armengaud, and Quinton, all men who have already contributed large sums towards aerial competitions. Leading aeronauts interested in the league comprise Farman, Delagrange, Bleriot, Levavasseur, Esnault-Pelterie, Capt. Ferber, Julliot and Kapferer.

DELEGRANGE MAKES A NEW EUROPEAN RECORD

PARIS, Sept. 17.—For the present the European aeronautical record stands at 29 minutes 53 4-5 seconds, obtained by Leon Delagrange at Issy-les-Moulineaux. What it will be in seven days from now it is impossible to say, but it is practically certain that it will be still higher than at the present moment. Already the arrival of the news of the flight of more than one hour by Orville Wright has quickened European aeronauts to greater activity.

Leon Delagrange's record was made in the early morning in the presence of Captain Ferber, Achille Fournier, Rene Gasnier and others. Almost as soon as the Antoinette motor was started up the biplane apparatus rose in the air and made fifteen and one-half circles around the field, covering a distance estimated at 15 1-8 miles before gently settling down to the ground with its five-gallon gasoline supply exhausted. The performance beat the record of Henry Farman with 20 minutes 19 3-5 seconds at Issy on July 6.

The following day Delagrange attempted to beat his own record, but again, owing to lack of fuel, just fell short of half an hour, his time aloft being officially certified at 28 minutes 1 1-5 seconds. Preparations had been made for a longer flight, but this was rendered impossible by a leakage from the gasoline tank, the apparatus being obliged to come to earth after a most successful flight in a rather strong wind.

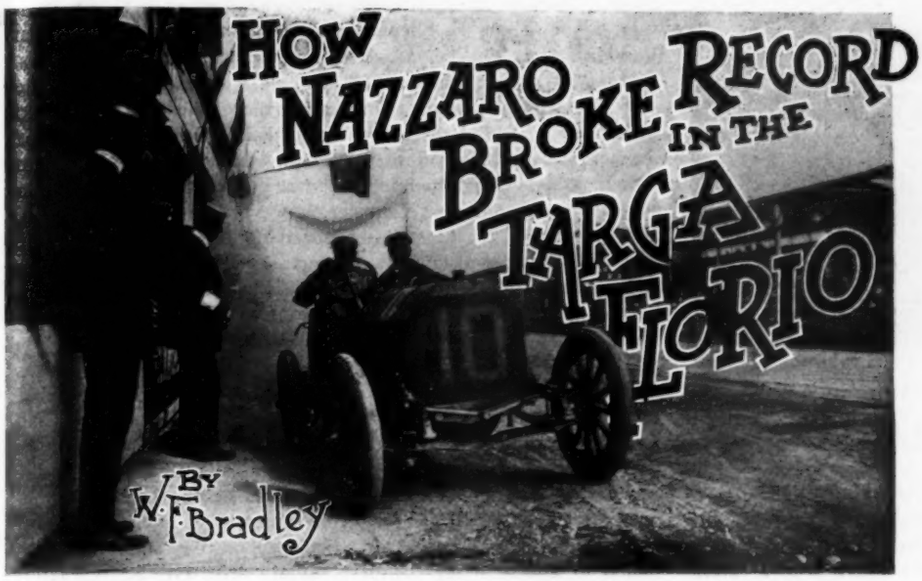
French aeronauts are now anxious to make an hour's records, and both Delagrange and Farman will train every day with this object in view. The newly-formed National Aerial League has offered a special money prize of $200 to the first French aeronaut who will double Wilbur Wright's present record of 19 minutes 48 2-5 seconds.

"REPUBLIQUE" OFFICIAL TEST SUCCESSFUL.

PARIS, Sept. 17.—*Republique*, the government dirigible airship, has completed all her official tests and trials and will be deflated in a few days in order to allow her place to be taken in the shed by Lebaudy to be fitted out as a training ship. The last trip of *Republique* was a voyage of eight hours, during which she evolved for a long time over Paris, then sailed off to the northeast to Compiegne, where further evolutions were made.

PREPARATIONS FOR INTERNATIONAL RACE.

BERLIN, Sept. 17.—Preceding the Gordon Bennett aeronautical race, scheduled for Sunday, October 11, there will be an official reception by the German Aeronautical Federation at Berlin on October 9, and on the following day a long-distance and a landing competition. The start of the international race will be at Schmagendorf, in the suburbs of the city, to which spot all balloons and material must be dispatched not later than October 8.



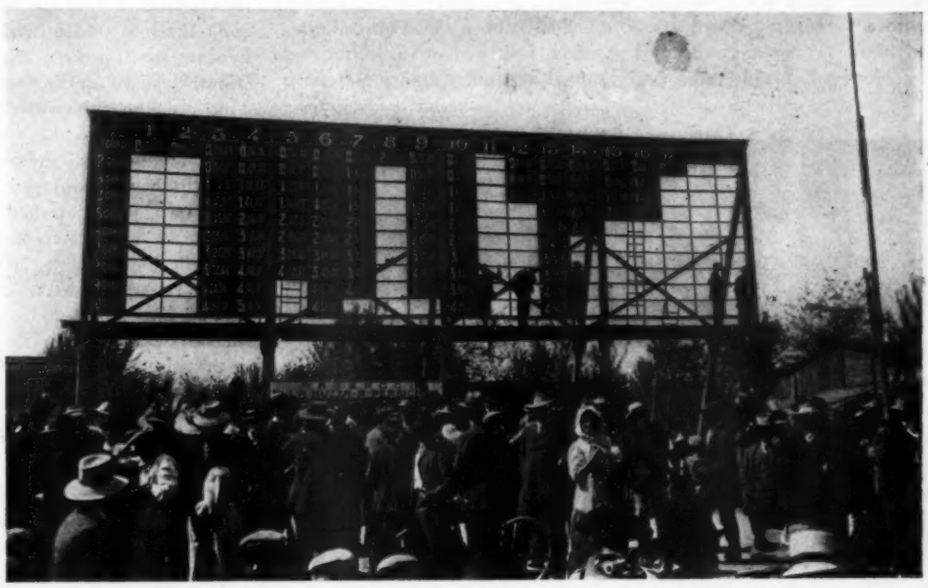
Nazzaro Halts in Front of the Grand Stand to Confer with Officials.

BOLOGNA, ITALY, Sept. 6.—Felice Nazzaro has abundantly proved that the setbacks of the opening part of the season were but a temporary clouding of his brilliant career. By this Sunday morning's performance on the flat course in the neighborhood of the old world town of Bologna he has won the Florio Cup and the Coppa d'Italia for Fiat, the Cup of the Automobile Club of Genoa and the Targa Florio for himself. In addition to the quadrette of cups and the bag of gold to which he is entitled, Nazzaro has the satisfaction of beating all existing records for long-distance speed on roads. The 328.2 miles were covered to-day in 4:25:21, which is at the rate of 74.3 miles an hour. The previous record was 70.61 miles an hour, also established by Nazzaro, in the Grand Prix of 1906.

Not only was the race the fastest ever run, but it was one of the most interesting and keenly disputed that Europe has known. There were seventeen starters, representing two Italian firms and four French, all using the special 155-millimeter bore cars built for and run in the Grand Prix at Dieppe. Germany having kept out of the affair, the race resolved itself into a dual between the Fiats and Italas, which had failed to make a good exhibition in the earlier race, and the Lorraine-Dietrich, Bayard-Clement, Mors and Motobloc—all French—which had failed to hold the French trophy for the land of the tricolor. In their own exaggerated language, each was for "revenge"; it was Italy that finally got it, after a magnificent fight.

Duray, as irrepressible as ever, first shot over the line on his big blue Dietrich, regarded as a stout champion for France. Gauderman, driving a Motobloc, failed to evoke a cheer, the best that was expected of him being a regularity display. Demogeot, the big cool-headed driver of the Mors, carrying No. 3, had plenty of partisans, though it was known that his car was two or three miles an hour slower than some of the others. Lancia, of course, evoked a roaring cheer as his Fiat shot away, followed a minute later by Gabriel on the Bayard-Clement, generally admitted to be the fastest car of the whole group. Cagno took No. 6, Itala; Minoia the No. 7, Dietrich, and Charles Faroux, ex-trolley car motorman in Milwaukee, at present Parisian journalist, took the wheel of No. 8, Motobloc—it was his first appearance in a pure speed test. After Garcet had gone on the second of the Mors cars, Nazzaro raised the cheer of the day when he and his Fiat started on the run of three hundred odd miles at a terrific pace. Hautvast and his exceptionally long-stroke Bayard-Clement were looked upon by the French just as likely to win as the Italian favorite Nazzaro. Henry Fournier steered the Itala which had been tuned up to a slightly higher speed since the Dieppe race. Trucco, the Italian, took the last Dietrich, Landon the last Mors, and Wagner the French ex-Darracq champion had the third Fiat. America had her only representative in Elliot F. Shepard, driving No. 16 Bayard-Clement, which had been handed over to him but a couple of weeks before owing to an accident to Rigal. The American had the lightest car of the team and the heaviest mechanic, a man who on account of his enormous size and weight had naturally to be dubbed "Baby." Piacenza closed the march with the third of the patriotically-named Italas, and then the race was on in good earnest.

Less than half an hour after the start, Duray had roared by again on his Dietrich, the time which was hoisted up on the board a minute later being 24:55 1-5, which for the 32-mile course works out at the merest fraction under 80 miles an hour. Lancia got ahead of both Gauderman and Demogeot on the first round, scoring 24:16, or just over 80 miles an hour. Gabriel maintained his position behind the Fiat and had just roared by when Gauderman's failure to appear in position was explained by his arrival with the left front tire and rim missing. He stated that the rim, which was a new Vinet with some modification which had not been previously tested, had flown off on the straightaway. He was able to hold the car to the road, but had to retire immediately, for the fixed rim was flattened beyond repair. The accident caused comment, for it was feared that there was going to be a repetition of the Dieppe rim accidents,



The Big Official Score Board and the Crowd in Front of It.

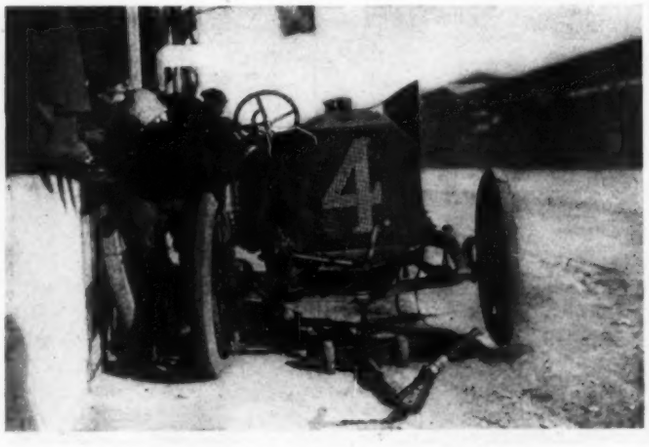
Minoia Changes a Tire on His Dietrich.

against which, however, careful advance provision had been made.

It was probably owing to this fear of rim failure that numerous changes had been made since the Dieppe race. The Michelin people had slightly modified their rim by the addition of a raised section opposite the valve, and a special pin to prevent the single locking turnbuckle getting out of vertical. It proved successful, not a single accident or mishap occurring. The Dunlop rim found a place on the rear wheels of several of the cars, but no driver would accept it for the front, the opinion being that it was too heavy, and that its powerful lock threw the wheel out of balance sufficiently to interfere with the steadiness of the car at highest speeds.

Minoia furnished the highest rate of speed on the initial round, his Dietrich getting round in 24:15 2-5—over 80 miles an hour. Lancia came next, followed by Wagner, Gabriel, Duray and Elliot F. Shepard. Hautvast, the American's team mate, failed to make the initial round with No. 11 Bayarad-Clement. His own explanation was that the steel-studded tires refused to hold when he applied the brakes to make one of the right-angle turns. He skidded as if he were on soap, had to choose between the spectators and the ditch and went into the latter, his car broken, but without a scratch to himself or mechanic. Charles Faroux was unable to finish the initial round, one of the universals between the gearbox and the countershaft having developed weaknesses during the first ten miles.

Lancia jumped into second position during the second round, getting over the course in the record time of 23:24, or at the killing pace of 84.3. It delighted the spectators, nine-tenths of whom were Italians, and the sight was really terribly impressive, for the speed past the grandstand, on a perfect straightaway, with a very slight down grade, must have been close on 90 miles an hour. Wagner got second position, followed at three minutes by Henry Fournier, who had jumped in one round from ninth place. Nazzaro was maintaining a steady pace in fourth position, while Elliot F. Shepard was at the end of the list with Landon of the Mors team to keep him company in the same class.



Lancia Making a Replacement of Tires.

Henry Fournier made a fine struggle with Lancia during the third and fourth rounds. On passing the grandstand at the end of the second round the Italian had a lead on the Frenchman of a fraction over three minutes. By the end of the second round Lancia and his Fiat had increased the distance from the Itala by exactly one minute. Fournier, however, was hard after him, and by some of the most dashing driving ever seen got past the Fiat and won first place. His triumph, however, did not last long enough to be officially recorded, for on arriving at the last bend before the grandstand straightaway he went into the ditch but a yard from Hautvast's Bayard-Clement. Fournier was certainly going too fast; he failed to notice the slow sign until he was immediately under it, and was then handicapped by a cloud of dust raised by Cagno, who was just ahead. He thought he had got clear round, when the left rear wheel slipped off into the ditch, and it was all over. Fournier was slightly cut about the mouth and had bruises on various parts of the body; his mechanic escaped with just as little injury.

Duray on the Dietrich and Piacenza on the Itala had both failed to appear after the first round. The fate of the latter was not known until the end of the meet, when he drove in and explained that a disarrangement of the timing gears had obliged him to dismount the lower half of the crankcase.

The mystery about Duray was explained, just when Nazzaro had worked into first position, by the slow arrival of Wagner's Fiat with Duray and Mechanic hanging on behind. In the white jersey decorated with the Lorraine cross Duray had a portion of an exhaust valve which told the story of his undoing. One of the exhaust valves had broken, dropped into the cylinder and quickly done damage that was beyond a roadside repair. Wagner was also entirely out of the running, with a front axle that had broken exactly through the middle. It was an unusual mishap, that might have been due to crystallization or to an unusually severe shock when passing over a lump on the road, the car going up and dropping down on one wheel. The axle really looked as if it had been cut through with a hacksaw. Wagner made a temporary repair with a log of wood and a few lengths of rope.

Though seven cars had gone out during the first four rounds, there was no lack of interest at the tire and gasoline station, the course being but two miles round and therefore providing frequent passages. The killing pace was having its effect on tires, which were being changed by some of the drivers at the rate of almost one a round. When they were pulled off most of the tires were mere masses of pulp, so hot that they could not be touched, and smelling like a vulcanizing establishment.

At the end of the fifth round, while leading by less than two minutes on Trucco's Dietrich, Nazzaro pulled in at the grandstand, jacked up the rear of his car and changed both tires. This was the only work he did at the tire station, one other tire being changed on the road; the front tires went the whole distance. Smooth Michelins in conjunction with the new and modified rim were employed. On arrival at the grandstand a large sized bird was flattened out against the radiator of the Fiat, giving an indication of the speed at which the car had been traveling.

The struggle was now between Nazzaro, Trucco (Dietrich), Lancia, Garcet (Mors), all of them so well grouped that although Nazzaro was leading the final issue was doubtful. During the sixth round Lancia's ill-luck attacked him in the form of the breakage of an overhead rocker arm, the replacement of which at the central tire station occupied about twenty minutes and removed all possibility of first place.

During the sixth round of the leaders it was learned that both Landon (Mors) and Elliot F. Shepard (Bayard-Clément) had been put out of the game. The Mors driver failed to make one of the turns, shot off the road and landed in the canal containing 12 feet of water. Fortunately the men were not pinned underneath, and a few minutes later were on the road again. Consid-

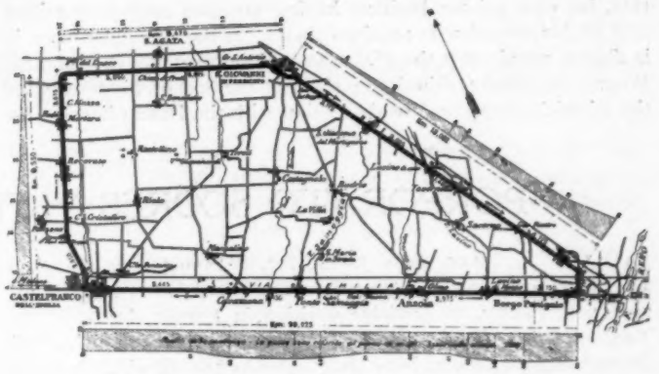
ering the fall, it was surprising how little damage had been done: one driving chain had been torn off, the hollow countershaft had snapped in two and the exhaust piping had been carried away. Every other part was intact. Elliot F. Shepard explained his accident when he drove into the paddock at the end of the fifth round. The left rear tire burst and locked the wheel with such violence that the rear axle casing made a half circle, the truss rod being broken off and brake connections snapped. Most of the bolts having been sheared, one-half the axle casing began to come away from the differential housing. Though it was possible to run the car, speed was out of the question. Shepard therefore remained in the paddock until the end of the race, then ran back to town, carrying his wife with him on the racer.

From seventeen the number of competitors had been diminished to eight: Nazzaro (Fiat), Trucco (Dietrich), Cagno (Itala), Minoia (Dietrich), Gabriel (Bayard-Clement), Demogeot and Garcet (Mors), and Lancia (Fiat). Trucco was running almost neck and neck with Nazzaro, Carcet might have been really dangerous had not a leak sprung up in his radiator system, obliging him to carry a jug of water with him; Demogeot and Minoia were gradually increasing their speed, while Gabriel and the powerful Bayard-Clement surprised and disappointed the French and their supporters by remaining in fifth and sixth position.

But it was not Gabriel's lot to finish, the overhead exhaust valve of the second cylinder breaking off and falling in, just as had happened to Duray's Dietrich. There were now seven struggling for victory, the two Dietrich's and the one Itala being so dangerous that they all beat Nazzaro on the eighth round. Lancia, too, was coming to the attack again, after his long delay, and seemed capable of gaining one or two places.

When the red No. 10 roared by on the last round, with victory certain for Nazzaro barring accidents, the cannon boomed and the grandstand got ready for a rousing reception. They were not disappointed, for 27 minutes later, with a margin of nine minutes in his favor, Nazzaro was the winner of the Florio cup, disputed for the third time. With one voice the grandstand roared: It was more than a national victory, it was the triumph of the favorite. Five minutes later the car had been run into the official garage, Nazarro had spent half a minute in the ambulance tent to have the dust wiped out of his eyes and was being conducted across the road for the official presentation to the Princess Laetetia. This man, who had been driving at more than seventy miles an hour for over four hours, was as clean as on the morning he presented his dainty-looking car for the official inspection.

While Nazzaro had been making sure of first place there had been a keen struggle between Cagno (Itala) and Minoia (Dietrich) for third position, second place already being assured to Trucco. The Dietrich would certainly have got third in addition to second place, but for the collapse of one of the front wheel bearings, on a curve ten miles from the finishing point. This



Map of the Course and Its Varying Elevations.

gave Cagno his chance, and the Itala finished third, followed by Demogeot on the Mors at one minute's interval. Lancia came in fifth and Garcet on Mors sixth. Had the race been five miles longer, Demogeot would certainly have got third place, for the Itala which beat him had one of the rear dumb irons broken off, sending the axle adrift, and lost all its water after standing a few minutes in front of the station. The result of the race was thus as follows:

Fiat, Nazzaro	4.25.21	Average 74.3 miles
Dietrich, Trucco	4.34.7	Average 71.8 miles
Itala, Cagno	4.56.12	Average 66.4 miles
Mors, Demogeot	4.57.11	
Fiat, Lancia	5.08.51	Average 63.7 miles
Mors, Garcet	5.22.7	Average 61.1 miles

Though no troops were employed on the course, order was perfect with the exception of a slight incident at the end. After the arrival of the second car the crowd invaded the course and half a dozen cyclists—cycles are as common as macaroni in Bologne—mounted their machines for a quick run home. Duray, who had been a spectator since his accident, sent forth a war whoop, seized the first cyclist, knocked him to the ground and flung his machine into the Dietrich gasoline station. Somebody from the top of the tire stands flung down an empty wooden box on the heads of the invaders, the committeemen acted vigorously, for a racing car might have appeared at any moment, and in a few minutes the road was clear again. There was none of the grandstand decoration that characterized Dieppe, but there were few points of the organization which could be criticized. The tarring of the road was especially well done.

Contrary to what had been generally published, Nazzaro has no intention of abandoning the racing game at the end of the season. His marriage with a Turin lady is announced for next spring, but this will not cause him to abandon racing. Lancia, on the other hand, will cease to figure at the wheel of racing

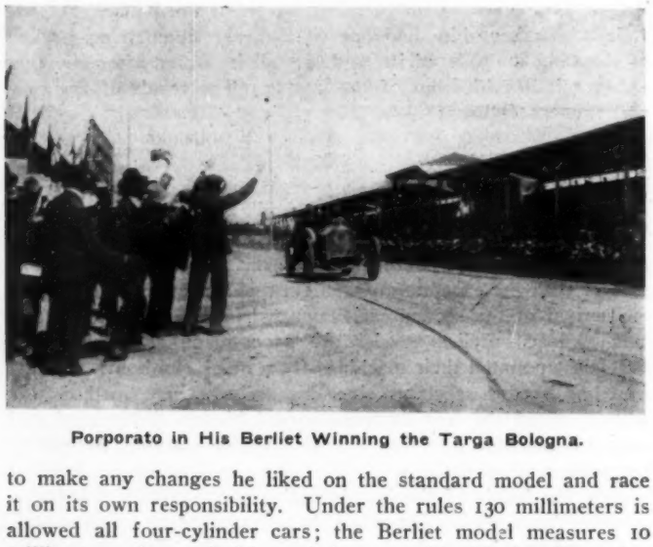
HOW THEY FINISHED IN THE CONTEST FOR THE FLORIO CUP—DISTANCE, 328.2 MILES.

CAR	*Driver*	*1st Lap*	*2d Lap*	*3d Lap*	*4th Lap*	*5th Lap*	*6th Lap*	*7th Lap*	*8th Lap*	*9th Lap*	*10th Lap*	*Miles per Hour*
FIAT	Nazzaro	25:36	51:14	1:17:31	1:42:42	2:10:12	2:37:21	3:03:55	3:33:07	3:59:03	4:25:21	74.3
			25:38	26:17	25:12	27:30	27:09	26:34	29:12	25:56	27:18	
DIETRICH	Trucco	26:13	53:46	1:19:34	1:45:24	2:12:15	2:43:00	3:09:03	3:35:20	4:07:19	4:34:07	71.8
			27:13	25:48	25:50	32:51	24:47	26:03	26:17	31:59	26:48	
ITALA	Cagno	25:49	55:25	1:21:46	1:50:36	2:19:41	2:50:41	3:16:37	3:43:20	4:17:15	4:56:12	66.4
			29:34	26:23	28:50	29:05	31:00	25:56	26:43	33:55	38:57	
MORS	Demogeot	28:49	57:07	1:25:05	1:56:57	2:25:16	2:56:11	3:28:26	3:57:44	4:24:56	4:57:11	66.2
			28:18	28:08	31:42	28:19	30:55	32:15	29:18	27:12	32:15	
FIAT	Lancia	24:16	48:10	1:12:33	1:41:10	2:15:30	3:12:58	3:42:37	4:10:17	4:41:10	5:08:51	63.7
			23:34	24:23	28:37	34:40	57:28	29:41	27:38	30:53	27:41	
MORS	Garcet	26:10	51:51	1:17:47	1:48:43	2:16:42	2:49:51	3:40:53	4:18:21	4:48:01	5:22:07	61.1
			25:39	25:56	30:56	27:59	33:09	51:02	37:28	29:40	34:06	
DIETRICH	Minoia	24:15	1:08:40	1:34:45	1:59:26	2:24:48	2:57:12	3:21:30	3:47:30	4:15:45	Broke front	
			26:59	43:31	24:41	24:42	33:04	24:18	26:00	28:15	wheel bearing	
BAYARD CLEMENT	Gabriel	24:40	58:15	1:25:59	1:54:25	2:27:35	2:53:20	3:23:42	4:30:32	Broke exhaust valve		
MORS	Landon	35:10	1:05:03	1:30:27	2:05:33	2:33:07	Missed turn; went into canal.					
			29:53	25:24	35:06	27:34						
ITALA	Fournier	25:42	51:05	1:16:03	Missed turn; went into ditch.							
			25:23	24:58								
FIAT	Wagner	24:17	48:47	1:17:35	Broke front axle.							
			24:30	28:48								
BAYARD-CLEMENT	Shepard	25:24	1:07:34	1:40:38	2:10:41	Bent rear axle housing.						
			42:10	33:04								
DIETRICH	Duray	24:55	Broke overhead exhaust valve.									
ITALA	Piacenza	25:26	Broke timing gears.									
MOTOBLOC	Gauderman	28:15	Lost dismountable rim on straightaway.									
BAYARD-CLEMENT	Hautvast	Missed turn; went into ditch.										
MOTOBLOC	Faroux	Broke universal joint on cardan shaft.										

cars, his own private business having assumed such proportions that all his attention is required there. In the Savannah race it is almost certain that the Fiat team will be made up of Nazzaro, Wagner and Duray, the latter being at the end of his term with the Dietrich people and ready to sign with the Italian house. As the result of the Bologna defeat French representation will be small in the Savannah race. It is practically certain that Bayard-Clement will engage two cars and Dietrich either one or two. The others will not participate from the present indications, and there is little prospect of a change of policy.

PORPORATO SCORES VICTORY IN TARGA BOLOGNA

BOLOGNA, ITALY, Sept. 7.—Berliet, a French firm that has never previously attempted to win speed honors, but occupies, nevertheless, an enviable position in Europe, has won the Targa Bologna hands down. Porporato, the Italian driver of the winning car, covered the 262.5 miles in 4:0:56, which is equal to 65.3 miles an hour—very satisfactory going for a four-cylinder car of but 120 millimeters (4.7 inches) bore. True to their fixed policy, the Lyons factory refused to enter a car in the Italian race, but gave permission to Porporato, one of their chief testers,



Porporato in His Berliet Winning the Targa Bologna.

to make any changes he liked on the standard model and race it on its own responsibility. Under the rules 130 millimeters is allowed all four-cylinder cars; the Berliet model measures 10 millimeters short of this, and it was with this handicap that Porporato set out to prepare for the race. He and his mechanic worked single-handed, the firm being so little interested in the race that not a single official from the factory was present when the call came for the designer of the racer to be presented to Princess Letizia.

The story of how the race was won is easily told. There were sixteen starters, thirteen of them being Italian and three French. Franchini, on a Bianchi, set the pace with an initial round covered at the rate of 73 miles an hour. Porporato was content with fifth position. The first round saw the Fiat and a Junior go out of business; then failures came so thick and fast that by the end of four rounds nine cars had disappeared through mechanical defects or road accidents, among the breakdowns being Vincenzo Florio's Darracq and the French Dietrich.

During this time Porporato and his Berliet had been reeling off rounds in 28, 29 and 30 minutes, working up to first position during the fourth round. During the fifth he stopped to replace a smooth Dunlop rear tire by a non-skid and to add a pint of water to the radiator, done without a stoppage of the engine. Later a rear tire ended its life with a loud report, the strain of a curve at 50 miles an hour having been too much for it. These were the only two occasions on which Porporato left his seat; from beginning to end the bonnet was never raised. Taking advantage of the rule which allowed the changing of wheels during the race, Porporato carried two spare front wheels, with inflated tires in position, on his rear brackets. They remained there, however, until the end of the race, for no tire trouble developed in front. Porporato declared that his reason for taking complete wheels in preference to rims was that the former could be changed quicker than the latter. The car being chain driven it was impossible, owing to weight, to set in the same way with the rear wheels.

A feature of the race was the absence of tire trouble. Although the speed attained was frequently 80 miles an hour, as is evident by the winner's average of 65, there was so little attention needed to pneumatics that for the first hour and a half not a single tire had been changed at the grandstand depot. On the previous day, when the winner's average was only nine miles an hour more, tire trouble was prevalent, showing that the 155 millimeter international rule has produced a car so fast that it is constantly in danger of failure by overstepping the limits of tire resistance. The lesson that has been forced home is that a bore of 130 millimeters is all that is required for the most powerful racers; beyond this speed is so great that there is a constant danger of mechanical lessons being lost owing to the failure of tires to support the strain. Doubtless the lessons of this season's racing will have the effect of deciding the international association to further reduce the maximum bore for racing cars.

Second place in the race fell to an S. P. A., handled by Appendino, who made a very slow initial round, but who immediately after jumped to the front and trailed Porporato for the last four rounds. Third place went to Buzio, on a Franco, another Italian combination. After being third and fourth for a long time, the Franco was obliged to dismount a portion of its carbureter, an operation that occupied nearly half an hour, despite the aid of a group of mechanics, and destroyed all hopes of a better position. Tangazzi's Junior went into fourth position; Maggioni's Zust got fifth place, and Piccoli's S. P. A. finished sixth. The rest abandoned before the eighth round had been accomplished.

As the result of the remarkably easy victory of the Berliet it is very probable that the firm will be represented in the next Grand Prix of the Automobile Club of France, more especially if, as is considered almost certain, the club decides to limit bore still further.

RESULT OF THE RACE FOR THE TARGA BOLOGNA—DISTANCE; 262.58 MILES.

CAR	*Driver*	*1st Lap*	*2d Lap*	*3d Lap*	*4th Lap*	*5th Lap*	*6th Lap*	*7th Lap*	*8th Lap*	*Miles per Hour*
BERLIET	Porporato	29:38	58:37	1:31:18	2:04:02	2:33:15	3:02:19	3:31:40	4:00:56	65.3
S. P. A.	Appendino	51:43	1:18:46	1:47:42	2:15:07	2:43:15	3:12:48	3:43:38	4:14:05	62.0
FRANCO	Buzio	29:05	59:27	1:33:56	2:06:28	3:06:15	3:38:32	4:11:04	4:40:57	56.0
JUNIOR	Tangazzi	39:06	1:19:36	1:55:16	2:27:57	2:58:53	3:31:43	4:09:38	4:43:49	55.5
ZUST	Maggioni	28:58	57:38	2:30:24	2:59:33	3:27:59	4:12:36	4:40:14	5:07:57	51.1
S. P. A.	Piccoli	29:09	1:02:18	1:31:28	2:53:23	3:34:00	4:09:44	4:42:59	5:15:41	47.7
JUNIOR	Manganotti	1:07:50	1:49:40	2:34:35	3:20:40	3:57:40	4:46:50			
BIANCHI	Brambilla	29:51	59:28	1:27:36	2:33:51					
FRANCO	Cariolato	37:33	1:10:56	1:48:47						
BIANCHI	Mayr-Franchini	27:05	54:40							
BIANCHI	Tommaselli	31:15								
DARRACQ	Ravetto	32:18								
DIETRICH	Parran	46:13								
DIATTO-CLEMENT	Primavesi	48:58								
FIAT	Vaccari	.....								
JUNIOR	Tamagni	.....								

USEFUL THINGS FOR THE AUTOIST TO KNOW

SECOND-HAND cars at a close figure are apt to have tires barely up to requirements of the tire manufacturers' guarantee. Such tires suffer from rim cuts and blow outs much more than tires a trifle larger, since the small tires have to be pumped quite hard, and even then flatten more under load than larger tires under like conditions. In purchasing a second-hand car it is well to consider the matter of tires somewhat carefully, and to figure on substituting larger tires if those used are under suspicion. A safe rule is to have the tires 1-2-inch in section for each 100 pounds of total load, including passengers and supplies. For example, a 3 1-2-inch tire should not carry over 700 pounds maximum. The tire makers have brought out two odd sizes of tires especially to take the place of smaller sizes without change of rim. These are the 31 by 4 and the 33 by 4-inch sizes. The 31 by 4 size will go on a 30 by 3 1-2-inch rim, and the 33 by 4 on a 32 by 3 1-2-inch rim, without changing the rim. Occasionally one finds a 34 by 3 1-2-inch tire which is too heavily loaded. Here one's best hope is that the felloe can be cut down for a 34 by 4-inch rim without seriously weakening it.

Looking Over the Lubrication Heads.

The oil and grease cups on joints of the steering gear, springs and other small bearings scattered about the car easily become clogged. It is not sufficient to see that the oil cup is filled with oil or that the grease cup is screwed down as far as it will go. Unless the oil actually runs in and the grease cup is observed to be slack after running, it is clear that the bearing is not receiving lubricant, and the best thing to do is either to force kerosene in, or, better, to take the bearings apart if possible, and clean out the solid particles with which the oil passages are probably clogged. Pour kerosene through the "breathers" in the crankcase up to the normal level of the oil. Start the engine and run it two or three minutes, thereby splashing the kerosene thoroughly about the crankcase and valve mechanism. Stop the engine and draw off the kerosene, which will carry with it a considerable accumulation of dirt and metal dust from the bearings. Refill the crankcase with clean oil and run the engine again—without load—for a few minutes to insure that the oil is splashed to all bearings needing it. It is now safe to run the engine under load.

Oils for Gearbox and Rear Axle.

If the gearbox and rear axle have plain bearings, the oil must be considerably thinner than if ball bearings are employed. The reason for this is two-fold. A fluid oil allows the grit from the gears a chance to settle, and it enters the bearings more freely than a semi-solid lubricant would. For plain bearings, regular gear case oil is about right in warm weather, especially as it is thinned somewhat by the warmth received from the engine and exhaust pipe. In cold weather it may be necessary to thin the oil with kerosene to induce it to flow at all. If, however, ball bearings are used, or if the bearings are plain but are separately lubricated, including the telescope bearing at the end of the sliding gearshaft, it will be safe to add a double handful or so of grease to the gearcase oil, leaving it just soft enough to flow slightly when warm.

Possible Carbureter Trouble.

In case the motor fails to start readily on priming the carbureter, and the mixture is found to be over rich, it may be that the drainage hole in the carbureter is clogged so that the overflowing gasoline accumulates and makes too rich a mixture. This, of course, does not apply to carbureters in which the overflow of gasoline dries out on the ground without depending on a drainage outlet.

Safe and Unsafe Dust Pans.

Drain outlets should always be provided at the lowest point of the dust pan and at the bottom of any "pockets" it may contain. If this is done, gasoline accidentally finding its way into a pocket will not remain, and there will be no danger of its catching fire, something that is always imminent with collected gasoline.

USE OF TIRE CHAINS IN PARKS DECLARED LEGAL

THE American Automobile Association and the National Association of Automobile Manufacturers have won out in their fight against the constitutionality of the notorious ordinance of the New York Park Board, prohibiting the use of tire chains on park roads. Justice Davis has decided the ordinance to be illegal, unconstitutional and void.

The test case was conducted for the two associations by Charles Thaddeus Terry, chairman of the legislative board of the A. A. A. and counsel to the N. A. A. M., through a writ of habeas corpus in the case of a taxicab driver.

The ordinance was declared invalid by Judge Davis upon the following grounds:

FIRST: That it was in direct violation of the motor vehicle law of the State of New York, known as Chapter 538 of the Laws of 1904. Upon this point the court said:

"This statute contains a uniform and comprehensive plan for the regulation of the use of highways by automobiles, except in respect to speed, and forbids the adoption by local authorities of ordinances regulating that subject.

"The ordinance in question contrary to this statute excludes from the free use of the park highways all automobiles having chains on their wheels, even though they have complied with all the provisions of the motor vehicle law, and admits them to such free use only upon getting permission from the commissioner. For this reason the ordinance cannot be upheld.

"We may assume that the purpose of the rule is to protect the roadbed, although that does not appear from the record, but whatever its purpose may be, the effect is to regulate the use of automobiles whose owners make use of chains to insure their practical and safe operation over the highways of the parks when they are muddy, slimy, or otherwise slippery. As stated above, such regulation by the local authorities is forbidden by the statute referred to."

The court distinctly lays down the rule in its opinion that the State motor vehicle law is absolutely comprehensive upon the questions of the regulation of motor vehicles, and that it forbids all regulation of such by local authorities with the one exception of speed, and this only when the conditions prescribed by statute are complied with.

SECOND: Upon the question of the unconstitutionality of the ordinance, Judge Davis held that in conferring an arbitrary power upon the commissioners to discriminate between those to whom they shall grant permits and to whom they shall be denied, the ordinance denies the equal protection of the laws and is in violation of the Constitution of the United States and of the State of New York. The court said:

"It is a vital defect in the ordinance that it contains no provision guaranteeing uniformity in its enforcement. No rule or principle is provided to secure its impartial execution. Inequality in its enforcement is thus not only possible, but probable, and so it fails to insure equal protection to all persons similarly situated and for this reason it is unconstitutional."

The court further held that the ordinance was in violation of the Constitution of the State of New York and of the 14th Amendment of the United States Constitution in that it arbitrarily discriminates between chains and other devices used to prevent skidding of automobiles. Upon this point the court said:

"Why the owners of the chain device should be put in one class and those using the other devices in another and exempt class, is not at all clear. . . . Indeed one fails to discover any reasonable basis or principle whatever, justifying the placing of the chain method in a prohibited class by itself. It follows, therefore, that the ordinances make an unlawful discrimination against those who use chains as a part of their vehicle equipment."

This decision of the Supreme Court effectually establishes what has always been the contention on the part of the automobilists of this State.

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THE STATUS IN AUTOMOBILE RACING.

Automobile racing, at least for the moment, is of some substantial worth to automobiling in general. Therefore, it will be a source of general satisfaction to those manufacturers and their agents, who bear the brunt of the heavy expense, that an agreement has been reached in the so-called racing war between the American Automobile Association and the Automobile Club of America. The exact interpretation of the agreement signed by the officers of the two organizations may safely be left to the lawyers who were involved in the final understanding. It would appear that whatever friction may be engendered for a time by those interested in preventing harmony, will soon give way to the insistence of the common-sense of the men really responsible for the recently reached understanding.

The need for an organization like the American Automobile Association is absolute and recognized, whether it be composed of clubs, or individuals, or both. The big club in New York City also has its sphere of usefulness, and being located in the metropolis of the country, it possesses certain advantages over the clubs of other cities. The constitution of the international organization provides for only one club from a country, and the A. C. A. unquestionably was in on the ground floor in the pioneer days of automobiling, and that was how it obtained its "foreign recognition," which it values highly and which it has fought to preserve, and has succeeded in preserving. But the A. C. A. was unsuccessful in inducing the clubs of this country to desert the A. A. A. and acknowledge the New York City organization as the fountain head of national power. Therein it encountered defeat, for the American spirit of the American clubs will not accept the foreign idea of the autocracy of a single club in a country.

The great thing, however, is that both the Vanderbilt and Savannah races will now be successes—one is needed in the metropolitan district, and the other will be of benefit to the sport and industry in the South. The mere fact that the Vanderbilt race is called "national," though its entry list will be "international" in character, doesn't retract one whit from its prestige, nor its value, to whatever maker may be lucky enough to be first across the line. A generous entry is promised in both events, though had the "war" continued it would have meant competition of slight worth to those participating.

Therefore, let us concern ourselves with the two big races scheduled, and let the future more or less work out its own problems, for ultimately it will resolve itself into a question of what the manufacturers of America shall decide to support and how they shall support it.

* * *

GROWTH AND INFLUENCE OF THE S. A. E.

The many and varied phases that engineering endeavor naturally assumes, and the fact that while the engineer keeps track, in a general way, of the inventions and progress of lines other than his own, he is only vitally interested in the particular branch in which he is occupied, makes necessary the devotion of a separate engineering organization to each field. In order to achieve that degree of cooperation in the study of a number of problems that is necessary to their most practical and enduring solution, it is evident that all must be working toward a common end, and it was on this account that membership in some of the older societies proved of little, or no help, to the automobile engineer in his early struggles. Hence, the conception of the Society of Automobile Engineers, which held its third quarterly meeting for the present year in Cleveland last week.

The S. A. E., as it has now come to be known familiarly, first came into existence in the Summer of 1905, and like other movements of a similar nature, it suffered in its early days from a lack of attention on the part of its promoters, who found themselves, in the main, far too busy building cars or manufacturing parts to find much opportunity to devote to a study of how those things could be done to better advantage outside of the walls of their own shops. But the demand for cooperation and investigation, which had already been recognized by the manufacturers' association, was felt more than ever by those outside the latter, and the Society of Automobile Engineers not only continued to exist, but to slowly gain recruits in spite of the fact that its light was hidden most of the time. Since 1905, when it was created with a charter membership of less than 50, it has steadily continued to expand, and its growth during the present year has been such that it now numbers more than 200 members, among whose ranks are to be found many prominent designers and accessory makers.

VANDERBILT AND GRAND PRIZE OPEN TO ALL

A STOP has been put by the parties themselves to the so-called "racing war" between the American Automobile Association and the Automobile Club of America. The conference committees, which were in executive session for a fortnight, with the chief idea of making an adjustment of differences between the two bodies over the running of the Vanderbilt Cup race on Long Island and the Grand Prize contest at Savannah, concluded their negotiations last week and received the approval of their respective principals to the compromise agreed upon.

Following the endorsement and signing of the document, the following official statement was issued simultaneously by both bodies on Thursday:

IT IS AGREED that the Automobile Club of America is the only American member of the International Association of Recognized Automobile Clubs, and that it is and shall be the only authority in America for the drafting of rules affecting and for the granting of sanctions for international races, and for the regulation of such races in this country. On the other hand, the matter of the sanction of and the formulation of rules for local and national races is agreed to be, as heretofore, in the sole power and jurisdiction of the association. The two bodies agree to cooperate with each other in making the Vanderbilt Cup race and the Savannah Grand Prize race successes. After the races of this year the two cups are to be deeded to an independent racing association, and are to be contested for annually, the Grand Prize Cup as the International trophy and the Vanderbilt Cup as the National trophy. It is also agreed that the club shall not encourage other clubs to withdraw from the American Automobile Association.

The essential points at issue between the two organizations have thus been settled, and their cooperation in the future in all matters relating to the sport of automobile racing is assured.

The full text of the agreement was made public by the club on Tuesday. It disclosed other concessions and pledges not embraced in the official statement at first issued. They embrace:

A definition of "national" and "international" racing in this country.

An agreement on the part of both bodies to hand over next year the Vanderbilt Cup and the Grand Prize to a corporation controlled by the Long Island Motor Parkway, Inc., on condition that it promote "national" and "international" races respectively for the two trophies.

The appointment of the Automobile Club of America as the sole representative of the American Automobile Association in foreign racing.

An agreement on the part of the Automobile Club of America to retire from the promotion of automobile racing after the running of the Grand Prize at Savannah.

A provision that the present "peace agreement" may be terminated upon the first day of January in any year after January 1, 1910, upon twelve months' previous notice in writing.

Pending a thorough understanding regarding the various clauses of the agreement, a joint committee from the A. A. A. and the A. C. A. will pass upon any differences that may arise in the premises.

The text of the agreement as given out by the club follows:

This agreement made this 11th day of September, 1908, by and between the Automobile Club of America, a membership corporation, created under the laws of New York, and the American Automobile Association, a corporation created under the laws of New Jersey, witnesseth:

I. That the American Automobile Association recognizes and acknowledges the Automobile Club of America to be the sole American representative and member of the International Association of Recognized Automobile Clubs, and that as such it is and shall be acknowledged and recognized as the sole and unqualified authority for all international automobile affairs, including races and contests, in the United States of America.

An international race or contest is one which is announced or advertised as "International," or one which is open to entrants of America and foreign countries. Cars of foreign manufacture may be entered in a race or contest without making the same as "International" race or contest, provided, however, that such cars be owned and **ENTERED BY AMERICAN CITIZENS, FIRMS, OR CORPORATIONS.**

II. The Automobile Club of America agrees that after it has conducted the Grand Prize Race at Savannah, in November, 1908, it will **RETIRE** from the promotion of races, so long as international racing shall be conducted in the United States of America under the **SANCTION** of said club and in accordance with the **RULES** of the International Association of Recognized Automobile Clubs, in as far as such rules shall apply to the race in question.

III. The American Automobile Association agrees to have changed the conditions of the **VANDERBILT CUP** race, proposed to be held on Long Island, in the Fall of 1908, so that the same shall be a purely **NATIONAL** race and not international in character, and in that event the Automobile Club of America agrees to **REMOVE ALL EMBARGOES** and disqualifications on such Vanderbilt Cup race, and the same shall be raced under the rules and conditions as now announced, except such conditions as would make it an international race, and the Automobile Club of America agrees to do everything in its power under these conditions to make such race a success.

IV. The American Automobile Association agrees that it will do everything in its power to make the **GRAND PRIZE** race at Savannah, proposed to be held in November, 1908, a success and to **REMOVE ALL EMBARGOES** and disqualifications against said race and to use its influence in having as many American cars as possible to enter this international race.

V. That after the year 1908 the Automobile Club of America agrees to **TRANSFER**, under a proper deed of gift, its gold **GRAND PRIZE** cup to a corporation controlled by the Long Island Motor Parkway, Incorporated, upon the condition that the said donee each year promote and conduct an international race for the same, under the sanction of the Automobile Club of America and under rules then existing of the International Association of Recognized Automobile Clubs.

VI. The American Automobile Association agrees that after the year 1908 it will have **TRANSFERRED** to a corporation controlled by the Long Island Motor Parkway, Incorporated, the **VANDERBILT CUP**, upon the condition that the said donee will promote each year a national race for the said cup, under the sanction and rules of the American Automobile Association for national races.

VII. The Automobile Club of America agrees to make no attempts to encourage other clubs to withdraw from the American Automobile Association.

VIII. It is hereby mutually agreed that the Automobile Club of America shall be the sole representative for the American Automobile Association for all foreign countries.

IX. This agreement shall be binding on both parties hereto until terminated, as hereinafter provided. It may be terminated upon the first day of January in any year after January 1, 1910, upon twelve months' previous notice in writing.

In witness whereof the high contracting parties have caused these presents to be signed by their duly authorized officers, the date first above written.

FOR THE AUTOMOBILE CLUB OF AMERICA,
(Signed) HENRY SANDERSON,
First Vice-President.
S. M. BUTLER,
Secretary.

FOR THE AMERICAN AUTOMOBILE ASSOCIATION,
(Signed) ROBERT F. HOOPER,
FREDERICK H. ELLIOTT,
Secretary.

How Foreign Cars May Enter Vanderbilt.

The status of foreign-made cars in the Vanderbilt Cup race is explained by Jefferson de Mont Thompson, chairman of the Cup Commission, to be as follows:

In view of the fact that the race for the selection of the American team has been cancelled and under the deed of gift a team of ten cars could compete in this race, the commission desires to call the attention of American citizens owning foreign-made cars, and American agents, whether firms or corporations, representing foreign-made cars, to the fact that cars of foreign makes, irrespective of selling price, cylinder capacity, or other restrictions, save for in weight, are now eligible for competition in the Vanderbilt Cup race.

Arrangements providing for a change in the character of the competition for this cup contemplate a change in the deed of gift, and the deed of gift has been changed by the donor, Wm. K. Vanderbilt, Jr., at the request of the Association.

The conditions provide simply for a classification by weight with a maximum limit of 2,644.8 pounds. The commission has also extended the date of entry without penalization, to October 1, and the entry fee of $1,000 will entitle a manufacturer to enter one, two, or three cars.

VANDERBILT AND GRAND PRIZE ENTRIES.

Two more entries added to the list of Vanderbilt Cup candidates quickly followed the announcement of the end of the "racing war." Clifford V. Brokaw has furnished an Italian contender by nominating an Isotta. The American entrants have been increased by the naming of a Matheson by the Matheson Motor Car Company, of Wilkes-Barre, Pa. This new aspirant for cup honors is not the Matheson that competed in the last race on Long Island, but a new car entirely with 6.1-inch cylinders. With Robert Graves' Mercedes, and a Thomas, a Mora, an Acme, a Chadwick and the two Knoxes, the list of entries already made

now reaches nine. The two Locomobiles promised practically raise the list to eleven. Entries will close on October 1.

Since the entry blanks and formal announcements have been issued, the engineers of the Parkway have reported that the work of construction is practically completed. The largest bridge on the parkway, which is at Central Park, was turned over to the cement workers last week. This bridge connects two long sections of the cement highway between Central Park and Bethpage, the Central Park and the grandstand.

All of the grandstand stretch is completed and cars have been running over it for some days. There is a little more work to be done between the grandstand and the western end of the parkway, but the bridges over intersecting highways in this section are open and the finishing touches can be put on in two or three days. This practically completes the eleven miles of parkway which forms a southern boundary of the 1908 Vanderbilt Cup circuit. The grandstand is about half completed. The telephone service has been installed around the entire circuit, and racing drivers who have been selected by the various entrants are preparing to open their headquarters on the parkway about the first of the month.

Fred J. Wagner, who is looking after entries for the Parkway Inaugural Sweepstakes, reports unbounded interest and enthusiasm in the trade over the novel event and is confident that at least 20 starters will await the word "go" on October 10. The division of the entrants into "thousand dollar" selling classes, the scaling of the entrance fees on the basis of price, the different distances to be run by each price class, and the fact that the entire field will race on the course together are proving popular with the makers and dealers, while the magnitude of the contest is arousing general public interest.

Entries for the Grand Prix at Savannah are at present set to close on the same day with the Vanderbilt nominations. The A. C. A. has a noteworthy international nucleus in the entries already made of three Fiat and three Benz cars. The Vanderbilt Acme was nominated this week and the entry of the Vanderbilt Matheson and of Mr. Buckley's B. L. M. racer also reported. A considerable foreign entry is already practically assured and a generous American participation probable.

The club has chartered the *City of Savannah* for its members. It will sail the Saturday before and return the following Saturday. There will be room for thirty touring cars aboard. The club is also arranging for special Pullman trains to leave Monday and return on Friday. Passengers on the steamer and trains will sleep aboard during their stay in Savannah.

NAZZARO WILL RACE AND MARRY LATER.

BOLOGNA, ITALY, Sept. 15.—There is no truth whatever in the announcement made about a month ago that Nazzaro would retire from the racing game this season. The marriage of the clever but modest Italian driver is fixed for the beginning of next year, but this will not interfere with his racing contract with the Fiat firm. It is now certain that Nazzaro and Wagner will be sent over to handle the Fiats engaged in the Savannah race on Thanksgiving Day. Lancia declares that he will not be at the wheel of the third car, his own business engagements in connection with the Lancia car making it impossible for him to travel to America. Though no official decision has been arrived at yet, it is exceedingly probable that Duray will have the third car. The Belgian driver is still connected with the Dietrich firm, but as his contract expires very shortly it is believed that he will be able to handle Lancia's car.

French participation in the Savannah race is not likely to be great. Dietrich may send two cars, and Bayard-Clément may be represented by Gabriel and one other. As to the rest, it is practically certain that they will remain at home. Demogeot is looked upon as a likely driver of one of the Dietrichs.

Ironton, O.—An automobile line between this city and Proctorville is now practically assured. A 20-passenger car will be used and two round trips will be made daily.

QUAKERTOWN'S STOCK CHASSIS RACE.

PHILADELPHIA, Sept. 21.—Five bona fide entries have already been secured for the 200-mile Founder's Week stock chassis road race, with excellent prospects of the limit of 20 entries, set by the committee being reached before October 7, the date of closing. The quintet already entered are: Maxwell, entered by the Tarrytown factory; American Locomotive, entered by Louis J. Bergdoll (who will also drive the car); Stoddard-Dayton, entered by the Hamilton Auto Company, Philadelphia agents; Peerless, entered by P. F. du Pont, of Merion, Pa., and Studebaker, entered by the factory and to be driven by Frank Yerger. Two Loziers, two Locomobiles, a Pullman, another Studebaker, a Pennsylvania, a Stearns, a Matheson, and a Renault are almost sure to be among the starters.

Contracts for the building of the grandstands and official stands have already been entered into; they will be located on the South Concourse, almost opposite Memorial hall.

The committee has decided to make the race 195 miles—25 times around the 7.8 mile course—and the knowing ones say that barring an epidemic of tire troubles, more than one can and will approach the mile-a-minute average. The only bad points on the course are the Sweet Briar hill and the swing into the Neill Drive from the West River Drive under a rather narrow railroad bridge. All the other turns are wide and gradual.

No road race was ever run off in this country over a course within 20 minutes' street car ride of a million and a quarter people, and for this reason the committee has decided to rope and fence off the entire course on both sides, in addition to using the 1,500 or 2,000 guards to be supplied by the city.

ANOTHER 24-HOUR AT BRIGHTON BEACH.

As was anticipated would be done, the Motor Racing Association has decided to run another 24-hour race at Brighton Beach, N. Y. It has set the dates for Friday and Saturady, October 2 and 3. At the meeting at which the decision was reached, pledges of 10 entries were received from members for the big race. Harry Lozier agreed to nominate the four-cylinder Lozier, which finished second in the last race, and Harry S. Houpt announced that he would substitute a Thomas Flyer for the Thomas Forty that was given a demonstration run in the first race.

Negotiations are in progress to secure Oldfield and Christie for one of their match races. A four-cornered six-cylinder match race with a Lozier, a Stearns, a Thomas, and an Acme as contenders, and a special contest with Oldfield, Christie, the B. L. M., the Fiat Cyclone, and the Fiat Tornado as contestants, are in contemplation as special features for Friday afternoon.

Improved camp arrangements, restaurant service, and track lighting are promised. The association received a sanction from the Automobile Club of America for the meet as an "international event." The association has also approved the Motor Parkway sweepstakes.

STRANG ENGAGED TO DRIVE RENAULTS.

Announcement is made by Paul Lacroix, manager of the American branch of Renault Frères, that he has signed Lewis Strang to drive Renault cars in future speed events. Every opportunity will be given Strang to drive in all the races of any importance in this country, and besides the racing cars which this company now has in America the arrival of one of the Grand Prix racers is expected soon for entry in the races at Savannah on Thanksgiving Day. A Vanderbilt Renault is a probability.

RYUS IN WHITE WINS LOS ANGELES RACE.

LOS ANGELES, CAL., Sept. 20.—The third annual 100-mile road race was run here to-day. A White steamer, piloted by H. D. Ryus, evolved as the winner. His time was 4 hours 34 minutes. Bert Latham, in a Kisselkar, was second in 4 hours 13 minutes. This is the third successive victory for Ryus and the White. Their time last year was 4 hours 30 minutes.

Knox 1909 Models

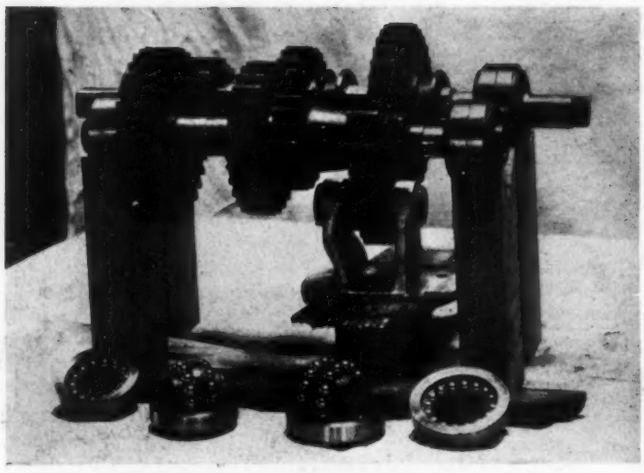
The 1909 Knox Model M from Springfield, Mass.—A Full-sized Touring Car of 50-horsepower Rating.

THERE will be three Knoxes for 1909, two water-cooled models and one air-cooled—the latter being for those preferring this type of motor construction. The following description applies to water-cooled types only, which are known respectively as models O and M. Model O is a 38-horsepower shaft-driven car, with motor, clutch and change-gear a unit construction, carried on a three-point support; whereas Model M, a 50-horsepower car, uses separate motor and transmission units, but carries each on a three-point suspension, it being also a chain-driven machine. Both models O and M will carry 1909 improvements in the matter of a three-disk clutch, replacing the cone type heretofore employed, and a modification of the intake and exhaust, as well as the intake and return water pipes of the motor. The changes in this piping greatly simplify the work of taking off the cylinder head, this being a separate part of the cylinder casting in Knox construction. Loosening the nuts retaining two yokes and taking off the nuts on the four studs holding the cylinder head in place, permits its removal for valve grinding or replacing.

Cylinder Construction.—The Knox cylinder design, having intake and exhaust valves in the cylinder heads and using a separate casting for the cylinder head, in order to waterjacket it more properly, results in a construction unique in American motor cars. The cylinder casting proper, with its integral waterjacket, has in its upper face a deep groove machined concentrically with the bore, into which fits a copper asbestos gasket; and in the cylinder head face is machined a circular tongue, which fits into the groove above the gasket. Four vertical bolts, which pass direct through the head, hold the two parts together. The water circulation, which enters the cylinder jacket at the bottom, is continued to the jacketing of the head through a short tubular connecting link in the form of a bridge casting, and the return flow is from the jacket part of the head to the radiator top. The inside of the cylinder head is also machined, so that the entire surface of the combustion chamber is smooth, and the capacity of the combustion chambers of the four cylinders as accurate as is obtainable. The maker claims that the smooth surface is less likely to retain deposits of carbon, and its freedom from short points or rough edges should eliminate preignition troubles from this cause also.

Knox Model O Seen from Above.

Model O Motor.—In this model the company continues the use of a unit power plant and three-point suspension, which is secured as follows. The upper half of the crankcase is formed with rearwardly extending arms, which encircle the flywheel and have their ends united by an integral transverse part, to which the front end of the transmission bolts, thereby uniting in one, for support purposes, the motor, clutch and gearset. This unit has its three-point support by a trunnion at the forward end, supported on a channel cross member, the ends of which rest on the frame pieces. The two rear supports are direct on brackets on the side members of the frame, lowered in order to secure a straight line drive from the crankshaft to the rear axle. According to A. L. A. M. rating, the model O motor is 38 horsepower, its cylinders having a bore of 4⅞ inches and 4¾-inch stroke. The intake and exhaust manifolds and the battery plugs are on the left, and the intake and return water piping, together with the short bridge pipes between the cylinders and the heads, on the right side. On this side also are located the high-tension magneto, toward the front, and the three-part group of oiler, timer and water pump at the rear. Intake and exhaust valves are made with integral head and stem and have the stems lubricated by carrying them through a gland. The usual rocker arm construction over the cylinder head is employed for opening the valves. Making the exhaust manifold in four parts allows for taking up of expansion through heating without transmitting any of this strain to the cylinders, and this manifold, as well as the intake, is securely anchored by four T-yokes.



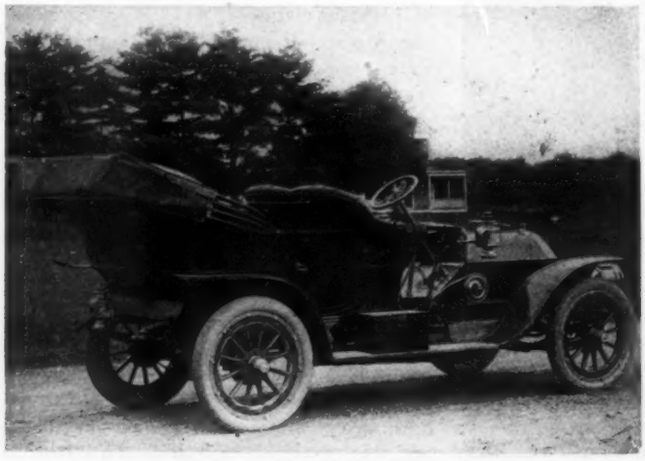
Gears and Gear-shafts of Model O, Dismounted.

Motor Accessories.—The oiling system is a positive feed, without the usual splash in the crankcase. At the right rear of the motor, and carried outside of the crankcase, is a gear oil pump driven by vertical shaft from the camshaft, which draws oil from the lower portion of the crankcase and forces it into a horizontal duct drilled in the upper half of the crankcase. From this are five branches to the five bearings of the crankshaft. Drilling the crankshaft in the usual manner conveys the oil to the lower bearings of the connecting rods, and drilling the connecting rods to the upper ends allows of forcing the oil to the wristpins, thus insuring a positive lubrication to the thirteen motor bearings.

The double ignition system consists of a gear-driven high-tension magneto, with wires direct to the plugs carried on that side of the motor, and a supplementary battery, Connecticut coil and timer, the latter on a short vertical shaft driven from the camshaft. The battery spark plugs are on the left side.

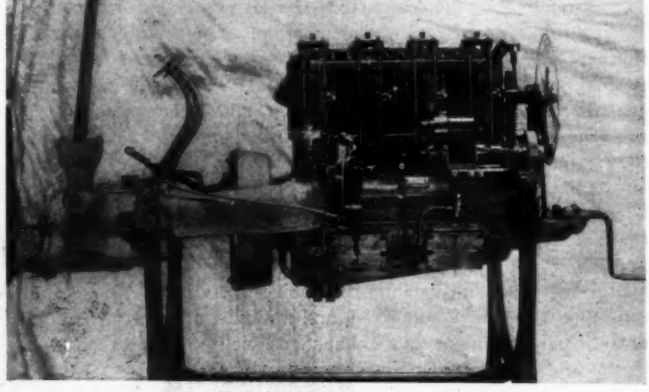
After considerable experimenting the company adopted the Stromberg carbureter, which is characterized by the transparent float chamber, spring controlled auxiliary air valve and water-jacketed mixing chamber. In the cooling system the pump maintains its unique position at the right rear, where it is driven by spiral gear from the timer shaft. It delivers the water through a tapered manifold to the base of the water jackets.

Transmission Improvement.—Carried within a recess in the flywheel is the new three-disc clutch, used for the first time, and which operates in oil. The middle disc contains cork inserts and connects with the transmission through its shaft; whereas the two outside discs attach to the flywheel. In the model O car the three-speed selective gearset is employed. Both shafts are carried on ball bearings, with a double ball race at the end of each shaft, one acting as a thrust bearing and one a radial bearing. In this model, as previously stated, the gearbox and cover are bolted to the rear end of the engine bed and are removable by withdrawing the connecting bolts; but, in addition to this, the gears and shafts may be removed without disturbing the gearbox or any other part of the power plant. The gearbox casting carries an extension enclosing the shifting rods for the speed changes.



The 38-Horsepower Knox Model O Touring Car.

Running Gear.—This model has a tubular front axle, with tierod located in rear of it; the steering knuckles are forgings, with heavy yokes. Hyatt roller bearings are employed in the rear axle, with ball races for taking the end thrust and two annular bearings for supporting the pinion shaft at the rear end of the propeller shaft. The steering gear is of the screw and nut type, the screw formed integral with the column and cut from a solid bar. Both sets of brakes are carried on the rear wheels, the emergencies expanding and the foot set contracting. Asbestos fibre is the friction material. Semi-elliptic springs are used throughout, the rear set being shackled at both ends. In connection with this double shackling is the employment of radius rods and the elimination of the torsion rod, the car being driven through the radius rods only. Thirty-four by 4-in. tires are used, the wheelbase measures 114 inches, and the weight approximates



Model O Power Plant, with Magneto, Pump and Timer.

2,850 pounds with equipment and five-passenger body. Model O is made in touring car, limousine, baby tonneau and sportabout.

The Model M Car.—The Model M car, with seven-passenger capacity, has a 50-horsepower motor, with 5¾-inch bore and 5½-inch stroke. Attention has already been invited to its one-piece crankcase. It employs the three-disk clutch, but uses a Mercedes type selective transmission, with four forward variations, and employs side chain drive. In other respects it is, except for size, a counterpart of the model O car. In touring car lines its wheelbase measures 127 inches, and the tires are 36 by 4½ and 5 inch. Like the model O car, it is manufactured in limousine and sportabout styles as well as touring car, and landaulette.

THIRD DIVIDEND IN POPE RECEIVERSHIP.

HARTFORD, CONN., Sept. 21.—Vice-Chancellor Howell, of Newark, to-day signed an order directing the receivers of the Pope Manufacturing Company to take such steps as may be necessary to secure the transfer of sufficient funds for the payment of a third dividend of 25 per cent. on the approved claims. There was pending an order obtained by Percy S. Bryant, of Hartford, as counsel for a creditor's committee representing claims originally in excess of one million dollars, directing the receivers to show cause to-day why they should not be compelled to pay a third dividend. Vice-Chancellor Howell also signed an order barring certain creditors from appealing from the decision disallowing their respective claims. The order was made pursuant to an order signed July 28, limiting the time of appeal.

LEGISLATION THE WAR CRY OF THE CLUBS

PENNSYLVANIA CLUBS CONSIDER NEW LAWS.

PHILADELPHIA, Sept. 21.—President Joseph H. Weeks, of the Automobile Association of Delaware County, Pa., has prepared three new laws which will be presented to the legislature when the next session convenes in January, 1909. The first provides for the appointment by the governor of a highway commission of three, who shall determine the location of the State's highways and pass upon all applications for State roads and in the building of roads. This measure also provides that where main highways of either telford or macadam are built by the State, a preservative binder shall be incorporated in the top layer of stone to prevent the blowing away of the roads in dust almost as soon as they are built.

Mr. Week's second bill proposes that the State shall build and maintain all main highways, and aid townships in constructing and caring for local roads; and his third measure provides that all money received by the State from automobile licenses shall be used for placing preservative substances on State-aid roads that are built entirely of stone, or shall be built hereafter.

S. Boyer Davis, of the legislative committee, of the Automobile Club of Philadelphia, will submit a measure providing for an increase in the automobile license fee. This measure, if it becomes a law, will, it is figured out, bring the State at least $150,000 from licenses.

To interest legislators in these various measures a committee will be appointed to circulate petitions throughout the State. These petitions will be addressed to the Senate and House of Representatives of Pennsylvania, and it is expected that upwards of 12,000 of them will be filed at the State capital.

WEST VIRGINIA MEET POSTPONED.

WHEELING, W. Va., Sept. 21.—The long-continued dry weather has made automobiling in this State such a hardship on account of the dust and general condition of the roads that the plans of many owners have been upset. In fact things have grown so bad that the annual State meet of the West Virginia Automobile Association, which was scheduled for this city during the past week, was called off. A club run to Columbus, Ohio, over the old National road had to be abandoned for the same reason, as the route selected was reported in very bad shape. There is possibility that the State meet may be held later in the fall when the roads will be in better shape, but it is probable that it will be postponed until spring.

OHIO CLUB WILL HAVE A DAY OF IT.

UHRICHSVILLE, Ohio, Sept. 19.—At a meeting of the Twin City Automobile Club, held last evening, it was decided to hold an "Automobile Day" on September 25. The forenoon has been set aside for the parade of decorated cars in which it is expected fully 100 machines will take part. In the afternoon a hill climb is scheduled, and from present enthusiasm nearly 40 cars will compete. As this is the first event of its kind in Tuscarawas county, all automobilists are planning for a gala day.

NASHVILLE AUTOISTS TO HELP CITY OFFICIALS.

NASHVILLE, TENN., Sept. 21.—Thirty of the most prominent business men in Nashville have decided that it is for their own, as well as the city's interests, that as automobile owners, they have an organiation which can work with the city officials. To this end a club was formed last week under the auspicies of the American Automobile Association, and its main object at present will be the restraint of all automobile owners in the city from violation of the State and city laws.

BALTIMOREANS WANT LAWS AND ROADS.

BALTIMORE, MD., Sept. 21.—A number of important matters were considered by the members of the Automobile Club of Maryland at the first weekly meeting the past week. First of all the dues of active members were raised from $10 to $20 annually. Associate members' rates will remain unchanged. By this means the club expects to increase its work in regard to pushing the good roads movement within the State, while it also desires to secure fair automobile laws and see to it that these are properly recognized by autoists throughout the city and State. Whether a custodian will be engaged to look after the club headquarters and the several bureaus proposed to be established under him will be decided at the next meeting.

A touring contest is looked forward to by the members, and Dr. H. M. Rowe was selected as chairman of a committee to make the necessary arrangements. President James S. Reese stated that the election of officers for the year will be held October 13, while the first meeting of the whist section of the club will take place the first Friday in October. At the conclusion of the meeting the president entertained the members at luncheon.

ROCHESTER CLUB IN NEW QUARTERS.

ROCHESTER, N. Y., Sept. 21.—The Rochester Automobile Club has just moved into its new quarters in the recently opened Hotel Seneca on Clinton Avenue Square. This new hotel, which is one of the finest in the State, will be an ideal location for the club, whose membership now numbers 525. The Board of Governors extends a most cordial invitation to members of other clubs, who may be passing through the city, to visit the new quarters, where they are not only welcome to the use of the club comforts, but they will probably find posted on the various bulletin boards useful information concerning late road conditions, police traps, etc. At present the club is warning all members of the following speed traps:

On the Summerville road near the toll house.

On the Buffalo road between Coldwater and the barge canal.

Between Cayuga and Auburn and near Camillus.

WHAT ONE PENNSYLVANIA CLUB IS DOING.

LANCASTER, Pa., Sept. 21.—In its efforts to secure good roads in Lancaster county, on the direct route from Philadelphia to Pittsburg, the Lancaster Automobile Club, at its September meeting, decided to allow its solicitor to select a man from the club for each township in the county whose duty it shall be to report to the solicitor all cases of violations of acts of assembly relating to the public highways. Particular attention will be devoted in October to the non-removal of loose stones from the roads and the neglect of road supervisors to erect at all intersections of public roads handboards legibly inscribed. The solicitor has sent to each constable and supervisor in the county a circular letter calling their attention to the law on these two subjects and advising them that these laws are in force and will hereafter be enforced. Constables are notified that if they fail to report any neglect of these prescribed duties their return will be challenged at the November term of court and objections filed against the allowance to him of any costs or mileage. In addition, measures will be taken against him for a false return and neglect of duty.

The members of the club are unanimously enthusiastic to give their solicitor their heartiest co-operation. This procedure of the club is being carried out to put the burden of responsibility for poor roads where it belongs—on the road supervisors and the constables.

In the interest of good roads the club also approved the proposition of Chairman Weeks, of the Pennsylvania Motor Federation,

for the appropriation by the State of $5,000,000 for the improvement of the highways.

The September meeting of the club was held at Lititz, and was preceded by a banquet. In connection with each monthly meeting of the club there is a banquet and the attendance always is large. The October meeting will be held at Ephrata.

For one of the younger clubs it is one of the most vigorous in the State. Through its efforts much has been accomplished to secure better roads in that section over which it has jurisdiction. The membership now is near the 200 mark.

HARTFORD MAY HAVE A 24-HOUR.

HARTFORD, Conn., Sept. 21.—There is a movement on foot to kill the forthcoming hill climb of the Automobile Club of Hartford over the Avon Mountain course and substitute therefor, a 24-hour race at Charter Oak Trotting Park. The contest committee of the local organization had practically decided to hold the hill climb on November 7th over the mountain course. The chief cause of the present agitation may be said to emanate in the success of the Brighton Beach 24-hour race. Charter Oak Park, where it is proposed to hold the local event, is at present in first-class condition and as the trotting season terminated in the recent grand circuit trotting meet, the speeding motor cars would work no material harm, as the track is soon to be fixed over. A. J. Welch, one of the owners of the park, is much in favor of the scheme, and has given assurances that the park could be secured. Such an event would be the initial attempt for the local club and it is proposed to have the meet for stock cars only. The dates proposed are Oct. 16 and 17, and it is the intention to start the cars at 4 o'clock in the afternoon, continuing until 2 o'clock the next day, leaving a lapse of two hours during which other motor car events would be run off, and then the final of the 24-hour grind would be resumed at 4 o'clock and would terminate at 6 o'clock.

SPEECHMAKING ON CLEVELAND RUN.

CLEVELAND, Sept. 21.--Interesting the farmers in a three day reliability contest, and convincing them that they should be more friendly toward the automobile, that is the task which the Cleveland Automobile Club has set itself, and during the coming reliability contect, October 14, 15, and 16, a most novel and unique plan will be pursued.

At every small town through which the cars are to pass a stop will be made of ten or fifteen minutes, and while the machines group together addresses will be made to the farmers by prominent Clevelanders who have already volunteered their services for this purpose. Some days before the contest the local club plans to advertise in the small country newspapers the fact that the contest is scheduled for their town and that a stop will be made of several minutes to allow inspection of the cars. This, it is thought, will attract a large part of the rural community, and short speeches will be made to the gathered crowd, after which "all will have an opportunity to inspect the dust covered machines which have traveled so many miles since daybreak—the chance of a lifetime to see real automobiles in a heart straining and nerve racking contest, my friends."

ASA GODDARD AGAIN AT HIS OLD JOB.

CLEVELAND, Sept. 23.—Once more the genial Asa Goddard is back in his old haunts again. When Goddard resigned from the secretaryship of the Cleveland Automobile Club some time ago, to accept the position of chief engineer of the Wadsworth Stone Co. of Pittsburg it was thought that he was done with this city for good and all.

But now he is back again, finishing the work of constructing the new Euclid road being built by the Automobile Club. He has charge of the laying of the final layers, and of smoothing up the rough portions of the work. Goddard is the man who suggested this road, and in a measure he is finishing the building of a monument to himself and the Cleveland Automobile Club.

INDIANA'S RUN UNDER GLIDDEN RULES.

INDIANAPOLIS, Ind., Sept. 21.—With a trip over the proposed route by Frank Staley, president of the Indianapolis Automobile Trade Association, and Geo. Weideley, chairman of the technical committee, last week, arrangements are practically completed for the two days' reliability run to be held in Indiana Oct. 1 and 2. The technical committee has decided to use the rules that governed the recent Glidden Tour and entries are now being received. At least 75 entries are expected.

The run will be to French Lick and return, the trip the first day being 131 1-5 miles through Edgewood, Greenwood, Whiteland, Franklin, Amity, Edinburg, Taylorville, Columbus, Azalia, Reddington, Seymour, Brownstown, Vallonia, Plattsburg, Salem, Livonia, Millersburg, Paoli, Braxton Station, West Baden and French Lick.

Returning the route is 122.2 miles long and will go through West Baden, Braxton Station, Paoli, Mitchell, Bedford, Oolitic, Needmore, Harrodsburg, Clear Creek, Bloomington, Ellettsville, Gosport, Whitaker, Paragon, Martinsville, Waverly and Glen Valley.

SOME POINTERS FOR LUBRICATION.

That proper lubrication is the life of the car has been pretty thoroughly drummed into the mind of even the tyro at automobiling. The following "Don'ts," by G. A. Haws, manufacturer of Panhard oil, give some practical pointers that are worth remembering:

1. Don't allow your motor to exhaust clouds of white smoke. Just enough oil is better than too much, and may keep you out of the police station besides.
2. Don't try to make a light oil by mixing a heavy oil with kerosene. Now that cold weather is about to set in, if the oil that you are using does not flow freely, use a lighter grade. Heavy oil thinned with kerosene is a common cause for cylinders carbonizing.
3. Don't assume that your motor is getting the proper amount of oil; make sure by examining the sight-feeds regularly. Starve a motor on oil and it may be seriously damaged even before it begins to show signs of distress by pounding or laboring.
4. Don't imagine that because you ask for a certain brand of oil you will always get it. There is so much substitution in the oil business nowadays that the wise automobilist makes sure that he gets what he asks for.

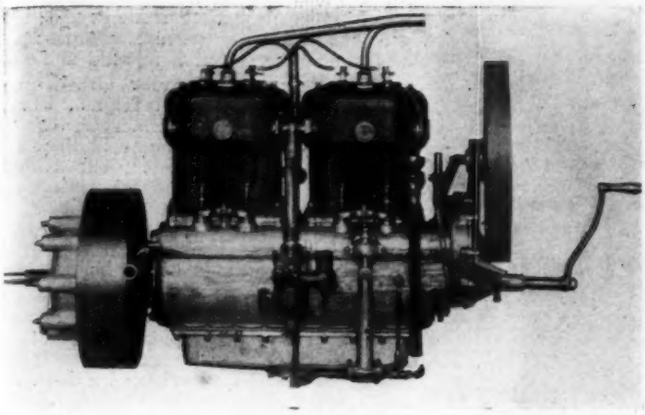
In addition, the steering knuckles and connecting rod, and the hundred and one other small moving parts should be thoroughly oiled. Ten minutes' judicious use of an oil-can every day will save an automobile owner a good many dollars in repairs and replacements at the end of the season.

MATHESON AUTOMOBILE COMPANY.

On September 12 the Matheson Automobile Company, of Wilkes-Barre, Pa., was formed with a cash capital of $150,000, to take over the entire selling end of the Matheson Motor Car Company. This company is an entirely independent organization from the manufacturing concern, which wished to be so situated that it might devote its entire time to the producing end.

At the time the selling company was organized, the manufacturing company simultaneously arranged for a bond issue of $200,000, which has already been disposed of. This means that the Matheson company will have $350,000 additional capital at its command for the manufacture of its 1909 product. To make this coming year even more marked than any before in the history of the company the services of L. C. Kenen as mechanical engineer have been engaged to design and bring out a new car, for besides the chain-driven $5,000 and $5,500 cars, which have heretofore been put on the market, it is proposed to have ready for sale at an early date a shaft-driven model selling for $3,000. The capacity of the plant will be doubled.

Arrangements have been made for desirable salesrooms on Broadway, from which point the selling company will market its cars in Greater New York and distribute throughout the country. G. W. Matheson, president of the manufacturing company, who is at present residing in Wilkes-Barre, Pa., will remove to New York and devote his entire time to the marketing.



Inlet Side of Motor of Marmon Light Touring Car.

WHAT THE MARMON COMPANY WILL FEATURE.

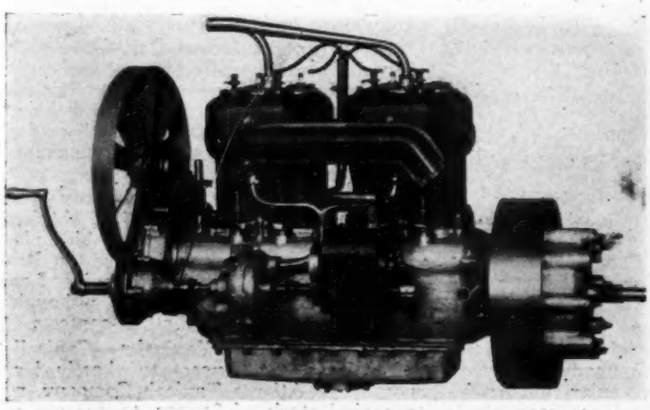
The Nordyke and Marmon Company, of Indianapolis, Ind., is preparing a light touring car of approximately 35 horsepower for the 1909 market. The photographs show the motor from either side.

That at the top of the column shows the carbureter side, and makes plain the method of supporting the motor by means of a cross tube just in front of the flywheel. The oiling connections can also be seen. The oil is forced by a pump driven from the camshaft to the main bearings of the crankshaft; it flows through ducts cut in the journals and crank cheeks to the crank pins, and finally through tubes carried by the connecting rods to the piston pins. This system enables the Marmon Company to set the motor in an inclined position and so secure a straight-line drive. The clearance may also be increased beyond the usual limit.

The lower photograph, showing the exhaust side, gives a good idea of the neatness of the design. The arrangement of the pump and the double-system Remy magneto seem particularly workmanlike.

Glens Falls, N. Y.—The Glens Falls Automobile Company has recently taken possession of the new garage which it erected on Glenn street. The building is three stories high with elevator facilities. A modern repair shop has been installed to handle local and transient trade. This company has for its officers E. F. Irish, president and secretary; W. I. Griffing, vice-president; W. L. R. Durkee, treasurer.

Harrisburg, Pa.—The Ideal Garage & Motor Car Company has opened an establishment at 906-8 Market street, with George F. Snyder as manager. The building has been remodeled and satisfies every condition of a first-class garage.



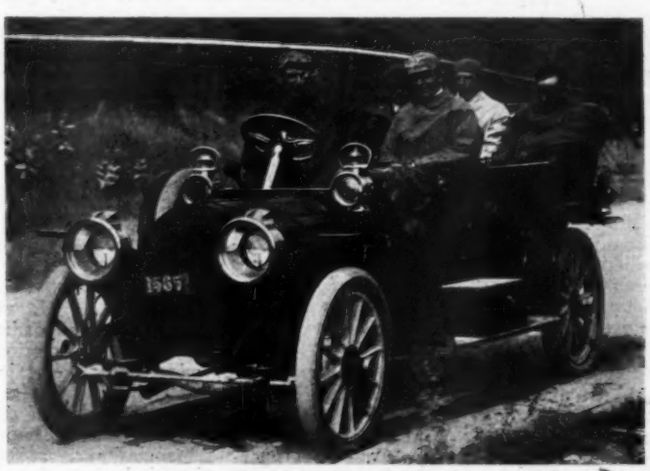
Exhaust Side of Marmon Motor, Showing Magneto.

PITTSBURG-PHILADELPHIA, 14 HOURS.

Not satisfied with having broken the automobile record between Pittsburg and Philadelphia twice this summer, S. D. Waldon, sales manager of the Packard Motor Car Company, last week went after this mountain road record again and succeeded in lowering it to the remarkable time of 14 hours 1 minute. Mr. Waldon drove the same 1909 Packard "Thirty" which he had used on his previous trips, and as usual was accompanied by four passengers, making a total load of five in the car. The passengers were W. W. Bennett and W. N. Murray of Pittsburg, and F. C. Graves and L. R. Mack of Boston. The schedule:

Miles	Place.	Clock Time.	Elapsed Time.
0.	Pittsburg	3:45	0:00—A
32.2	Greensburg	4:55	1:10
51.2	Ligonier	5:50	2:05
70.7	Stoyestown	7:05	3:20
76.8	Buckstown	7:28	3:43
90.2	Schellsburg	8:09	4:24
99.7	Bedford	8:25	4:50
107.7	Everett	8:57	5:12—B
134.2	McConnellsburg	10:23	6:38—C
142.4	Ft. Loudon	10:58	7:13
156.3	Chambersburg	11:32	7:47
180.7	Gettysburg	12:33	8:48
209.6	York	1:56	10:11
222.4	Columbia	2:30	10:45
233.9	Lancaster	2:57	11:12
260.6	Coatesville	4:08	12:23
266.9	Downington	4:20	12:35
294.3	City Line	5:26	13:41
302.4	Philadelphia	5:46	14:01

Only Stops.—(A) blocked railway crossing, 2 minutes; (B) for coffee, 3 minutes; (C) for gasoline, 7 minutes.



S. D. Waldon and Cross-Pennsylvania Party.

AN AMERICAN MANUFACTURER ABROAD.

Thomas B. Jeffery, whose long experience makes him a dean in the automobile industry of America, and whose name has been connected with the word Rambler for over twenty-eight years, has just returned from a three months' tour through Scotland, England and Germany, where he took the opportunity of investigating some of the manufacturing methods of foreign countries. The most striking feature to him was the fact that almost no attempt was made there to build a machine at what we consider a popular price. The machines are heavy and only those with a large income can afford to own one. He decided that the cost of production was high, largely because of the comparatively small number built, and the fact that the real manufacture of the car was distributed among a variety of concerns, the machine itself being little more than an assembled car.

An interesting thing happened during his tour of England which illustrates how useless a car from that country would be in America. The Rambler builder in making his little local trips hired various cars of various makes and while passing along the road one day while in England, he noticed a tin mine a short distance from the road, which could only be reached by going over a rather rough road. On his requesting the driver to turn in so that he might inspect the mine, he was informed that to go up that road would tear the under portion of the car to pieces, because the rocks in the road were too high.

Testing Out the Chalmers-Detroit on the Famous Grosse Pointe Track, Detroit.

Race Track as Testing Ground.—Since the Chalmers-Detroit Motor Company has begun to make deliveries of the new "30" model, they have had so many cars out for testing purposes that it became necessary to procure some place where a large number of machines could be tested out at high speed. After some negotiation with the track racing committee of the famous Grosse Pointe track, permission was obtained for the use of this mile circuit for testing out of cars. As it is only a short distance from the factory it is very convenient and every day fifteen to twenty machines are given a long track test in addition to the road test.

A Strenuous Pope-Hartford Trip.—Rather a strenuous flying test trip was recently completed by W. C. Walker, secretary of the Pope Mfg. Co., Assistant Superintendent Seymour, James Grady, the well-known driver, and Mechanic Houston. They left the Hartford Club at 1 P.M., and passed through Providence and Boston to Newburyport, where they spent the night. Early the next morning they were on the road again and continued on to Portsmouth; then striking inland, they made a circuit round Lake Winnipesaukee and returned through Worcester and Springfield to Hartford. In all they covered 600 miles in a day and a half.

National Battery Co. Affairs.—Announcement is made by the National Battery Company, of Buffalo, that the receivership under which the company has been working for the past eight months was terminated August 19, and the entire property has been restored to the stockholders. Full control of the reorganized company has been secured by the Cutler-Hammer Manufacturing Company, of Milwaukee, well known as makers of battery charging rheostats and other electrical controlling devices. The plant of the company will remain at Buffalo, but the business will be conducted under new management.

Greatest Industry in Syracuse.—The H. H. Franklin Manufacturing Company objected to the statement made in a Syracuse paper that the greatest single industry in Syracuse is the manufacture of clothing. The clothing concerns did a $3,000,000 business last year, but the Franklin company beat that figure by a million. This is for the year ending September 1. J. E. Walker, of the big automobile concern, says that in the last seven years over 6,000 machines have been built at the factory. In 1902, when the concern was organized, thirteen runabouts were built, the total value being $15,600, and thirteen men were employed at the work. The payroll now contains the names of 1,500 men. Next year the concern expects to add to its output a number of commercial vehicles and motor cabs.

A. L. A. M. and Standard Rims.—When seen regarding the report that the Licensed Association had decided upon the adoption of a certain form of quick detachable rim, Albert L. Pope, chairman of the tire committee of the association, said: "It is hardly to be expected that the Licensed Association as a body, with the far-reaching influence that its actions necessarily have, would take precipitate action. They have not as yet taken any action, specifically adopting any particular type of quick-detachable rim."

Another New Car Coming.—The announcement comes from Muncie, Ind., that a new factory for the manufacture of automobiles will be started in this place as soon as the title to the site for the plant can be obtained. The project is being financed by Thomas F. Hart and Madison Maring, of this city, and outside interests. Although no definite details have been given out, it is understood that they have obtained the rights on a car which has been successfully marketed for a number of years.

Stoddard-Dayton Wins Three.—At San Francisco last Saturday, in the presence of 20,000 people, a Model K Stoddard-Dayton, which sells for $2,500, won three events on the program, going out of its class in two of them. This machine won in the event open to cars costing $2,000 to $3,000 for 10 miles, also the race open to those costing $3,000 to $4,000 for the same distance, and the free-for-all against a field of six machines.

New Swinehart Buggy Tire.—To meet the demand for a special autobuggy tire the Swinehart Rubber Company has put on the market a tire of its regular clincher design in sizes adapted to these cars. It is made larger than the ordinary carriage tire, of specially compounded and cured rubber, which gives it greater resiliency, and the grooved side design permits a wider tread, affording better traction in mud and sand.

New Home of Invader Oil.—During Founders' Week at Philadelphia, Charles F. Kellom & Co., manufacturers of "Invader" oils, will be at home in their new location, 113 Arch street. The building has been entirely remodeled both inside and outside, and affords much better accommodation for the increasing needs of the business than the old quarters further up the street.

Visiting the Franklin Plant.—Henceforth the many visitors at the H. H. Franklin Manufacturing Company's factory in Syracuse, N. Y., will be given a personally conducted tour by experienced guides, who will explain in detail how the Franklin car is constructed. Many of the principal parts will be shown to illustrate how systematically the manufacture is carried on and how carefully every piece is inspected and tested.

The Other Side of the Story.—The Winton Motor Carriage Company has in press a booklet explaining their views on the light weight question. Although admitting every argument put forward in favor of light cars, they believe that the advantages of heavy weight cars are more important. The book is well illustrated and will be ready for distribution within a week.

Mora Company Election.—Last week, at the annual stockholders' meeting of the Mora Motor Car Company in Newark, N. Y., the following officers were elected for the coming year: S. H. Mora, president; T. W. Martin, vice-president, and W. N. Freeman, secretary and treasurer. A resolution was passed reducing the number of directors from seven to five.

E. M. F. Cars in New York.—H. J. Koehler, the New York agent of the Everitt-Metzger-Flanders Company, has just returned from a trip to the factory in Detroit. He has contracted for 1,000 E. M. F. cars for distribution in his territory, which includes New York City with ten adjoining counties and the State of New Jersey.

Cleaning Up the Dietzmans.—The United States Circuit Court has notified Joseph Harris, as trustee for the bankrupt Dietzman Shock Absorber Company, to dispose of 150 sets of these absorbers as soon as possible. This constitutes the remainder of the stock on hand in the possession of the trustee.

Densmore Company of Buffalo.—A new firm, to be known as the Densmore Company, has just been incorporated in Buffalo with a capital stock of $15,000 and will deal in automobiles. The incorporators are W. R. Densmore, of Buffalo, and Fred Densmore and F. Sturtevant, of Erie, Pa.

Tires for the Royal Car.—The Continental Caoutchouc Company has been informed by their home office that His Majesty, the Emperor of Austria, will be presented with two automobiles, both equipped with Continental tires, to commemorate the sixtieth year of his reign.

Shock Absorbers at Brighton.—Cars equipped with Truffault-Hartford shock absorbers took first, second and third places in the 24-hour race on the Brighton Beach track last Saturday. The winning Lozier used them for the first time, although it has competed in many other contests.

Atlanta to Have Taxicabs.—Capitalists of Atlanta, Ga., expect to shortly incorporate the Atlanta Taxicab Company, with a capital stock of $12,000, to operate cabs on the city streets. Ten machines will be purchased to begin with.

Grand Central Palace Show Poster.

One of the most artistic show posters ever brought out is the one-half sheet lithograph of the A. M. C. M. A., under whose management the Ninth International Automobile Show will open New Year's Eve in Grand Central Palace. Eight different colors have been embodied in the scheme. It is arranged so that no printing is placed on the pictorial part, which can be cut out and framed.

IN AND ABOUT THE AGENCIES.

Pennsylvania.—The Pennsylvania Auto Motor Company announces that it has just concluded arrangements with J. M. Quinby & Co., carriage builders, of Newark, N. J., to distribute Pennsylvania cars in northern New Jersey, New York City and vicinity. The Quinby company will open a large showroom in New York and will handle the Isotta also. A specialty will be made of furnishing Pennsylvania cars with special Quinby bodies.

Mitchell.—Having outgrown its present quarters at 236 North Broad street, Philadelphia, the Penn Motor Car Company has secured a lease on the three-story building at the northwest corner of Broad and Cherry streets, and after necessary alterations will move into its new quarters, possibly about October 1. Manager Walter Cram says his company has contracted to dispose of at least 300 Mitchells during the next twelve months.

Jackson.—The Jackson Motor Car Company of Philadelphia has been organized to look after the interests of the Jackson car in the Quaker City. Quarters have been secured with Prescott Adamson, at the northwest corner of Broad and Spring Garden streets, where the Columbia and Renault are also handled.

New Packard Quarters.—The Packard Motor Car Company of New York has leased the Osborne Realty Company's store at Brantford and Treat place, Newark, N. J., for their branch in that city.

New Tire Concern.—The W. D. Spring Cushion Tire Company of Philadelphia has filed articles of incorporation with a capital stock of $250,000 and will manufacture tires for all kinds of vehicles.

Studebaker.—John A. Bersenger, builder and dealer in carriages and owner of an automobile repair shop in Huntington, N. Y., has taken the agency of the Studebaker for 1909.

Pierce Arrow.—Henceforth the Ellis Motor Car Company, agents for the Pierce Arrow in New Jersey, will be located at 124-126 Washington street, Newark, N. J.

PERSONAL TRADE MENTION.

Wagner-Field Company.—Fred J. Wagner, until recently with *Motor Age*, and Russell A. Field, late auto editor of the Brooklyn *Daily Eagle*, have established an advertising service in the Thoroughfare Building, 1777 Broadway, New York City, under the name of the Wagner-Field Company. The motor car and interests allied with its sale and manufacture will be made a specialty.

George M. Davis has been placed in charge of the George N. Pierce Company's publicity department. Mr. Davis is generally recognized among the most efficient press agents connected with the automobile industry. He formerly occupied that position with the E. R. Thomas Motor Co.

J. E. Doane, for the past two years Syracuse representative of the H. H. Franklin Manufacturing Company has added to his field of activity that part of New York State east of Rochester to the Hudson River.

C. E. Apgar, formerly in the employ of the New York branch of the Franklin Automobile Company, has resigned from that concern, and joined the New York force of the Haynes Automobile Co.

G. A. Winslow, who has been for nine years past with the Boston Cycle & Sundry Company, Boston, Mass., has joined the forces of the Boston branch of the Pennsylvania Rubber Company.

F. F. Neaver, who for a number of years has been sales manager for the Studebaker Brothers Mfg. Co., is going to take charge of that company's branch at Portland, Ore.

Carl J. Simons has resigned as manager of the Palace Auto Company of Kansas City, Mo., and will become manager of the Maxwell-Briscoe branch October 1.

C. F. Stimson, formerly of Kansas City, Mo., is to be appointed manager of the new branch of the Maxwell-Briscoe Company in Minneapolis.

H. D. Benner, recently appointed Philadelphia agent for Michelin tires, will shortly open well-equipped quarters at 320 North Broad street.

DEATH OF VALENTINE B. LANG.

HARTFORD, CONN., Sept. 22.—Valentine B. Lang, vice-president of the Hartford Rubber Works Company, died suddenly at his home in this city this noon. He arrived home this morning from a trip to Columbus, O., but did not complain of feeling ill. After lunch he had an attack of heart trouble, which resulted in his death.

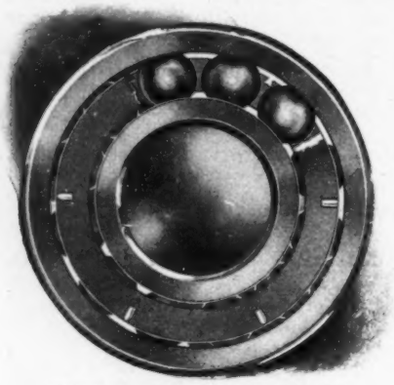
Mr. Lang was born in New York, July 18, 1858. Twenty-five years ago he entered the employ of the West Shore Railroad, as foreman of the machine shop, under the late Charles H. Dale. Mr. Lang next became assistant superintendent of the Chicago & Alton Railroad, and afterwards master mechanic of the C. N. O. & T. P. Railroad, at Chattanooga, Tenn. From there he went to Birmingham, Ala., where he was connected with the Great Southern Railway. From Birmingham he went with Morgan & Wright, and had charge of their new plant at Detroit. Two years ago he came to Hartford as factory manager of the Hartford Rubber Works Company, and in 1907 was promoted to be vice-president. He is survived by his wife. Mr. Lang was a thirty-second degree Mason, and belonged to the Knights Templar Commandery in Detroit.

Branch Managers and Field Representatives, Hartford Rubber Works Company.

Standing, left to right—D. W. Shattuck, G. D. Niles, G. R. Noble, F. J. Kerner, H. E. Field, vice-president; Charles Kenyon, A. D. Cruden, J. J. Tompkins, Charles Clark, D. W. Pinney, E. H. Fahy, F. B. McClunie. Top row, sitting, left to right—Charles Langmaid, George Orr, W. T. Powell, W. H. Reed, W. R. Barnes, H. C. Severance, H. F. Snyder, E. S. Roe. Second row, sitting left to right—H. Barth, Jr., E. W. Culver, E. H. Johansen, J. P. Krogh, A. L. Lowe, W. H. Bell, P. H. Goodall. Lower row, sitting, left to right—H. B. McIntosh, W. Brown, M. C. Stokes, H. E. Smith, R. H. Gillies, J. D. Anderson, president; H. Plow, treasurer; F. Kesser, A. W. Kirk.

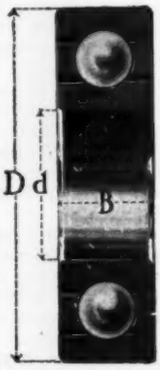
INFORMATION FOR AUTO USERS

New Annular Ball Bearing.—A new type of "silent" annular ball bearing which possesses some special advantage over preceding types is shown in the accompanying illustration. This new bearing is made by Fichtel & Sachs, of Schweinfurt, Germany,

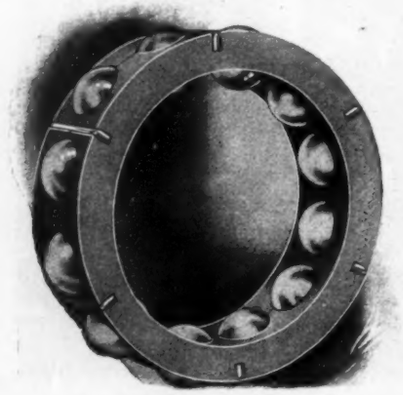


VIEW SHOWING BALLS EXPOSED.

and it resembles former ball bearings made by that well-known firm in respect to the method of introducing the balls. This method, as users of these bearings know, is to form angular entering grooves in the sides of the inner and outer races, and after the bearing is half filled to introduce the remaining balls by way of these grooves. Contrary to a possibly common impression, these side grooves are not quite as deep as the races themselves and therefore the balls are sprung in under some pressure. Once in they do not touch the side grooves, and even if they did the fact that the grooves are angular would prevent them from tending to escape. So far as the ball "knows" the side grooves are no longer there. This construction presents obvious advantages over that in which the races are so shallow that the balls may be sprung in from any point, since such races are usually too springy to endure material



CROSS SECTION VIEW.



F. & S. BALL-CARRYING CAGE.

end loads, whereas bearings constructed in the manner above described will carry end loads from 1-10 to 1-4 of their radial load capacity. It also permits a larger number of balls to be used than when, as a bearing, without side grooves, only half the races are filled with balls. In the new type of bearing the distinctive feature is the separator, which is so formed as to permit almost the entire space to be filled with balls. The separator is die-cast of a special alloy and requires almost no machining. It is split in the central plane of the balls, and the two halves are united by brass wires or dovetail section, which are inserted in dovetail-shaped grooves and have their ends clinched over into notches in the sides of the separator. From the illustration it is seen that the loss as compared with the "full" type is only one ball. The makers of this bearing lay special stress on the high quality of the materials used and on the extreme accuracy of workmanship and sizing. It is obvious that a bearing such as the one described, having more than the usual number of balls, should distribute its load among several balls instead of concentrating it on three or two, or even on a single ball. To realize this, extreme accuracy in both balls and races as well as perfect uniformity in size of balls is necessary. Fichtel & Sachs claim to have made this degree of accuracy a matter of commercial practice. These bearings are imported by J. S. Bretz Company, Times Building, New York City.

Motorlube Oils.—"Perfect automobile lubrication means the reduction of carbon without materially reducing the lubricating qualities of a pure Pennsylvania petroleum. A few years ago it was thought a heavy viscous oil would give better lubrication than the so-called light oil, which is not true," says B. S. Mellor, manager of the E. A. Tygert Company, makers of motorlube oil, 614 Chestnut street, Philadelphia, Pa. "The viscosity of a very heavy oil is very great at low temperature, but the very high temperature of the cylinders must be considered. Below are some relative viscosity tests of heavy and light oil:

	70 F.	140 F.	200 F.	300 F.	400 F.
Heavy	3100 sec.	253 sec.	75 sec.	40 sec.	21 sec.
Light	1270 sec.	135 sec.	52 sec.	35 sec.	20½ sec.

The above tests go to show that at 400 degrees F. the light oil has practically the same viscosity as the heavy. It is well known that a light colored highly filtered oil has less carbon than the heavy loaded dark colored oils, and it is my opinion that a light oil of sufficient viscosity is better in all respects for automobile lubrication than a heavy oil."

New Feature on Speedometer.—One of the features of the new Peerless Speedometer, which has just been placed on the market by the Peerless Specialty Company, 1876 Broadway, New York City, is that the season's mileage cannot be altered except by sending the instrument back to the factory, thus making it impossible for any one to run a machine with one of these instruments attached without the owner's knowledge.

The Utility of "Permanit."—In the issue of THE AUTOMOBILE for September the statement was made that "Permanit," manufactured by Adolph Karl & Company, of Newark, N. J., would prevent blowouts. From the nature of the substance this is manifestly impossible, but the manufacturers do assert that it will neutralize the effects of punctures by immediately healing them through chemical action.

"Oilzum."—The White & Bagley Company, Worcester, Mass., has recently put out a little device which will undoubtedly prove very convenient to a great many auto users. This appurtenance consists of a bracket, as shown in the illustration, for holding a can of oil on the running board. The lower end of the bracket projects under the running board and is fastened by two brass screws, so that the top of the board is not marred, and the bracket may be put in place or removed on a moment's

WHITE & BAGLEY DEVICE FOR CARRYING CAN OF OIL.

notice. By attaching another bracket to the back of the running board, two cans may be carried, the strap being brought clear over the two cans. Many tourists have found that at times it is convenient to have a good supply of oil on hand, but have sometimes found difficulty in carrying it handily. This arrangement should help them out, and the manufacturers will furnish these brackets free of charge to all users of their carbonless cylinder oil.

Improved Methods in Lens Mirror Manufacture.—The problem of manufacturing a permanent silvered surface for the reflectors of the acetylene lamp has baffled the producers from the first. The common opinion has been that the difficulty was in the proper silvering of the mirror, but Stevens & Co., Providence, R. I., manufacturers of the thermo mirror reflectors, claim to have discovered that the trouble comes, not from poor silvering, but from the fact that because of the difference in material of the backing unequal expansion took place between the glass and these materials. When this took place the perfect contact between the glass and the silver was disturbed, allowing moisture to creep in, which caused oxidization and the consequent loss of the reflecting power. To remedy this Stevens & Co. have produced a combination of backing materials which, when applied upon the surface of a lens mirror, they maintain will expand and contract in unison, insuring perfect contact under all conditions between silver and glass.

Nine Lives.—The Empire Automobile Tire Company, of Trenton, N. J., is sending to its friends in the trade a poster in colors showing a pussy cat with a blue bow on its neck sitting in the middle of a 36x4 Empire clincher tire. The implication is, of course, that the tire, like the pussy, has nine lives.